

EXTERNAL REVIEW OF HAMILTON CACC

**ON BEHALF OF
ONTARIO MINISTRY OF HEALTH AND LONG-TERM CARE**

**FINAL REPORT
OCTOBER 31, 2001**

IBI
GROUP

EXTERNAL REVIEW OF HAMILTON CACC
FINAL REPORT

October 31, 2001

Mr. Mark Hull
Acting Provincial CACC Co-ordinator
Emergency Health Services Branch
Ministry of Health & Long-Term Care
5700 Yonge Street, 6th Floor
North York, ON M2M 4K5

Dear Mr. Hull:

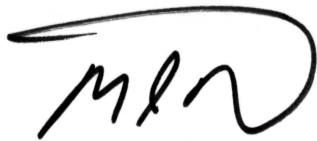
**FINAL REPORT
EXTERNAL REVIEW OF HAMILTON CACC**

We are pleased to submit this report containing the findings and recommendations of our external review of the Hamilton CACC operation.

Thank you for giving us the opportunity to work with you on this most interesting assignment.

Sincerely,

IBI GROUP

A handwritten signature in black ink, appearing to read 'MR', with a large, sweeping horizontal stroke above it.

Marvin Rubinstein
Associate

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1. INTRODUCTION

1.1 BACKGROUND

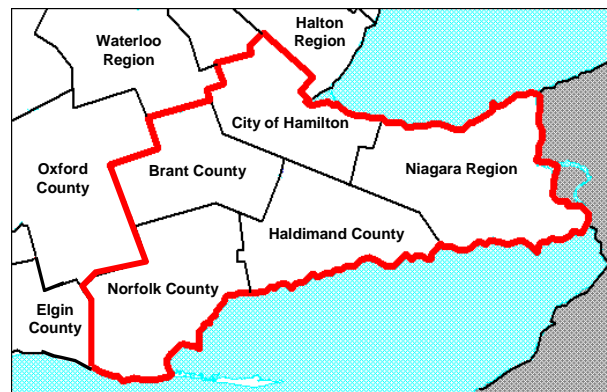
The Hamilton Central Ambulance Communication Centre (CACC) dispatches ambulances for the Regional Municipality of Niagara, the recently amalgamated City of Hamilton, County of Brant, the recently restructured Counties of Haldimand and Norfolk, and the Six Nations Reserve.

Several of these upper tier municipalities (UTMs) have repeatedly expressed concerns about the CACC's inability to accommodate their local municipal ambulance fleet service requirements.

Some Hamilton CACC personnel have also expressed concerns about the operation of the centre.

On June 15, 2001 the Emergency Health Services Branch of the Ministry of Health and Long-Term Care (MOHLTC) retained the services of IBI Group to carry out an independent review of Hamilton CACC.

EXHIBIT 1.1: HAMILTON CACC CATCHMENT AREA



1.2 OBJECTIVE & SCOPE

Paraphrasing from the study terms-of-reference, the objective of the review is:

.... to investigate the present operation of Hamilton CACC and to recommend changes in accordance with best business practices, which will enhance the dispatch system and its capability to accommodate the land ambulance requirements of the UTMs, which the CACC serves....

The scope of this review extends to major aspects of the Hamilton CACC operation including:

- Organization and management;
- Staffing level and workload;
- Staff recruitment and retention;
- Technological resources;

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- Quality assurance and training; and
- Operational policies, procedures and protocols.

The scope of this review does not extend to the issue of governance of dispatch. While it is acknowledged that governance of land ambulance dispatch is of significant interest to several local UTMs, herein the focus is on Hamilton CACC itself and on operational changes, which will enhance its capability to accommodate the land ambulance requirements of the UTMs, which the CACC serves. These are issues, which need to be addressed irrespective of future decisions concerning governance.

The Dispatch Sub-committee of the provincial / municipal Land Ambulance Implementation Steering Committee (LAISC) is considering alternative municipal dispatch governance models, including that of joint provincial / municipal management. It is expected that the Sub-committee will take the findings of this external review of Hamilton CACC into account in their discussions.

1.3 APPROACH

To fulfil the requirements of this assignment, IBI Group adopted an approach, which focused on the following activities:

- **Stakeholder consultation:** Placed considerable emphasis on consultation with local stakeholders and Hamilton CACC personnel, as a principle mechanism by which to identify issues, concerns and potential solutions. The local stakeholders are identified in Appendix B. They included representatives of the five UTMs served by Hamilton CACC, their ambulance operators and paramedics, local hospitals (and base hospital programs), and locally based fire and police services;
- **Assembly and examination of pertinent documentation:** With the assistance of MOHLTC staff and local stakeholders, assembled and examined a considerable volume of information pertaining to the operation of Hamilton CACC. The data included minutes of meetings, memoranda, correspondence, call volume data and reports;
- **Review of operational policies, procedures and protocols:** These included policies, procedures and protocols pertaining to day-to-day operations; intake and ongoing training programs; procedure for tracking and investigating complaints; procedure for updating mapping information, etc. The approach included a review of the current policy and procedure manual, consultation with Hamilton CACC management and staff, a limited number of random call audits, and a review of several investigation reports of incidents prepared by MOHLTC Investigation, Certification and Regulatory Compliance Group;

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- ***Benchmarking to other dispatch / Best practices:*** Compared the call taking and dispatch functions of Hamilton CACC to Toronto CACC, and carried out a broader benchmarking to other emergency dispatch systems. These included two other CACCs operated by MOHLTC in London and Barrie; transfer payment CACCs in Toronto and Kingston; ambulance dispatch centre in Calgary; joint ambulance and fire dispatch centre in Edmonton; fire dispatch centres in Hamilton, Niagara Falls and St. Catharines; and Niagara Regional police services dispatch centre;
- ***Consultation with other experienced professionals:*** Consulted on specific issues with other knowledgeable professionals, not associated with the operation of Hamilton CACC. For example, consulted with the Chair of the Medical Advisory Committee of the Provincial Base Hospital Advisory Group on matters of call priority assignment protocols, quality assurance and training; and with experienced managers of other dispatch services on matters of operational policy, staffing and workload; and
- ***Value added assessment / recommendations:*** Drawing upon the experience gained from numerous previous land ambulance assignments. Following assembly and review of the information, identified and assessed key factors / best practices, reviewed the information with stakeholders and client, and subsequently formulated / documented recommendations.

2. CONTEXT: EMS IN TRANSITION

With the transfer of responsibility for “fleet” to UTMs and designated delivery agents, which commenced less than two years ago on January 1, 2000, the land ambulance system “landscape” within Ontario has been altered significantly. Some of the changes have had a positive influence while others have had a less-than-desirable contribution.

Of particular consideration is that the provincial land ambulance system is still in the midst of a period of flux. UTMs across Ontario are still adapting. At least one UTM within the Hamilton CACC service area is still in the transitioning process i.e., Haldimand County, which continues to evolve from contractor to direct delivery agent.

Moreover, there are transitional issues (as outlined below) which are still to be addressed and changes, which are yet to be introduced. No doubt, the current state of flux will evolve to a more stable situation over time, as the transitional issues are settled, and as the stakeholders adapt more comfortably with their respective responsibilities. In the interim however, some degree of anxiety continues to exist among land ambulance stakeholders.

To varying degrees, the experience / lessons over the past 20 months will (should) have a bearing on future decisions pertaining to not only the enhancement of Hamilton CACC, but also to CACCs throughout the province.

2.1 CHANGES IN ACCOUNTABILITY

Historically, MOHLTC managed and administrated all elements of the provincial land ambulance service delivery system including policy development, service design, service delivery and dispatch. In addition the Ministry owned the capital assets and bore all of the costs.

With the recent transfer of the responsibility for the “fleet” operations to upper tier municipalities over the period January 1, 2000 to January 1, 2001, new requirements for inter-governmental management, public-public and public-private partnerships have emerged.

The result is a newly evolving management paradigm in which all land ambulance stakeholders, including UTMs, MOHLTC and CACC must learn to function within a decentralized system of shared accountability, with shared authority for specific components of the system, while working collectively to ensure the efficient, effective and seamless delivery of quality emergency medical services (EMS).

2.2 PERFORMANCE-BASED OPERATIONS

Some municipal ambulance systems are transitioning from systems, which historically have operated on a “level-of-effort” basis to “performance-based” operations.

- **Level of effort:** With this approach the emphasis is primarily on managing the land ambulance resources (staff and equipment) and controlling the costs within a set budget.
- **Performance-based:** Unlike level-of-effort systems, which specify activities, performance-based systems emphasize expected results, usually in terms of pre-defined outcomes e.g., response time standards, quality of care, customer satisfaction. These expectations may be applied to various aspects of ambulance operation (including vehicle maintenance, absenteeism, etc) to achieve an overall high level of service performance and cost-effectiveness.

Several North American (and Canadian) urban jurisdictions are evolving towards performance-based models, as they are considered more accountable and lead to a higher quality service at a reasonable cost. Canadian examples include Calgary and Edmonton outside of Ontario, and Toronto and York Region within Ontario.

Two of the five UTMs within the Hamilton CACC catchment area are actively progressing to performance-based operations. They are the two larger UTMs: Regional Municipality of Niagara and City of Hamilton. The other three relatively smaller UTMs (Counties of Brant, Haldimand and Norfolk) have to date maintained a level of effort operation, although at least one (Haldimand) is considering a future change to a performance-based system.

As more UTMs evolve to performance-based operations CACCs throughout Ontario are likely to come under increasingly greater scrutiny as municipal officials endeavour to monitor the quality of their land ambulance fleet performance and control the fleet costs.

2.3 RESPONSE TIME STANDARD

In 1997, as a component part of the then proposed transition of responsibility for land ambulance fleet services, MOHLTC amended the Ambulance Act to include the following standard:

“The operator of an ambulance service in an upper tier municipality or designated area shall ensure that, in 90 per cent of the priority 4 (emergency) calls received in a twelve month period, the response time performance of the operator’s ambulance service is equal to the response time performance set by the person who operated the service in 1996.”

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The operator's response time performance is measured from T2 (time the crew is notified) to T4 (time paramedics arrive on scene). Over the past three years there has been considerable debate over the applicability of this standard; some UTMs arguing that it is too difficult to measure and others that the '96 base value is in itself unacceptable, particularly in rural areas where the values may range in excess of 20 minutes (as opposed to half that value or less in some urban communities).

The province and the Association of Municipalities of Ontario (AMO), by way of LAISC is investigating alternative response time standards for communities throughout Ontario.

Given that the data maintained by CACC is the primary basis for planning, and for monitoring ambulance fleet performance, UTMs will continue to rely extensively on CACC (and the accuracy of its records) to help them achieve their performance targets.

2.4 FUNDING ISSUES

In late 2000 the province distributed a funding template defining the land ambulance costs, which are eligible for a 50 percent provincial grant. The template however, applies only to the level of ambulance service in existence on the date of assumption.

For proposed service enhancements (i.e., acquisition of additional vehicles or equipment, capital upgrades to stations, increases to the staffing pattern, additional training, etc), each municipality is required to submit a "business case" analysis to support / justify its request for additional funding. As yet there are no defined guidelines for the preparation of the business case analyses. Accordingly, municipalities have varied expectations and the submissions have produced mixed results.

2.5 DISPATCH

Because the performance of CACC has a direct bearing on the performance of UTM fleets and the fleet costs, it is in the interest of both the UTMs and MOHLTC to ensure that CACCs are appropriately structured, staffed and technologically resourced to provide a high quality communications (dispatch) function.

For this reason (and for other provincial interests) the province is advancing with the implementation of a state-of-the-art land ambulance computer aided dispatch system (ARIS 2) and a new radio/telephone communications system by Bell Mobility (GMCP). These more advanced tools are being phased in, across the province, over the next few years.

The Bell Mobility radio/telephone system was slated to be introduced into Hamilton CACC in July 2002. The target for ARIS 2 was the summer 2003. Both schedules are running slightly in arrears.

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Moreover, the province and UTMs by way of the Dispatch Sub-committee of LAISC have agreed on several dispatch principles including one which confirms upon UTMs an ability to influence local dispatch protocols, procedures and policies that apply to their respective ambulance fleets, so long as they do not contravene the five principles set out in the Ambulance Act (i.e., accessible, seamless, integrated, responsive and accountable).

Another principle, which the province and UTMs have tacitly agreed upon by way of the Dispatch Sub-committee of LAISC is that UTMs may be given the opportunity to manage dispatch, if that is their preference; although no UTM should be forced to do so. In this regard, the Sub-committee is considering alternative municipal dispatch governance models, including that of joint provincial / municipal management.

2.6 COMPETITION FOR PERSONNEL / INCREASED COSTS

The transfer of responsibility for land ambulance fleet services to UTMs has produced several less-than-desirable effects.

One item of particular concern is that it has given effect to considerable competition throughout the province for the recruitment of experienced / knowledgeable ambulance staff at all levels: senior management, middle management, field supervisors and paramedics (at both the primary and advanced levels of care).

Competition itself is not unhealthy. The problems lie in the manner in which it is currently being carried out and the resultant impacts, which affect organizational stability, operational capacity and costs.

Because the number of job opportunities exceeds the number of individuals qualified to fill the positions, by a significant amount, many UTMs are participating in aggressive programs not only to outbid one-another but also to recruit qualified personnel from one-another offering such items as higher wages, signing bonuses, payment of relocation expenses and covering the cost of advanced education and training.

The situation may at best be described as fluid, with many experienced personnel (particularly experienced paramedics) relocating from one municipality to another in order to take advantage of the current opportunities (oftentimes more than once).

The result is an escalating cost to all UTMs (even those who do not participate in the practice, as they are nevertheless affected by it) and to the province.

Prior to the realignment of responsibility for fleet (January 2000) the paramedic wage scale was consistent across Ontario. Since then the situation has changed dramatically, with larger urban centres such as Toronto, York, Durham and

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Halton offering substantially higher wages to attract qualified paramedics. The impact has begun to spread to other parts of the province including the County of Middlesex (London area) where paramedics recently received an arbitrated increase of over 10 percent. Another noticeable trend is the migration of part-time paramedics to urban centres, which are offering full-time employment (or increased part-time hours).

It should be emphasized that at present there is but a limited availability of qualified paramedics. This problem however, should resolve itself over time as more recruits are generated by community colleges. Further exacerbating the current competitive situation are recent actions by Toronto, York and a host of other municipalities to increase the size of their paramedic complements. These communities are advertising throughout Ontario, for qualified paramedics.

Even the province is not insulated from these effects. MOHLTC and its CACCs have lost numerous experienced management staff to the UTMs and they are finding it to be a major challenge to fill the vacancies created by the departures. In the case of the Ministry and its CACCs the situation is relatively more serious, as they cannot compete at the salary levels being offered by the UTMs.

The vacancies exist at head office (in Toronto), in field offices throughout the province and within the CACCs. To fill these vacancies MOHLTC resorts extensively to the use of secondments i.e., staff who fill positions in an acting capacity. Relative to those who have vacated the positions, many of the acting incumbents have less years of experience / less training.

A further complexity is the significant disparity in communicator (dispatcher) wages among emergency services organizations (UTM fire, UTM police and provincial ambulance). As is described later in this report, UTM wage rates are substantially higher; giving rise to an exodus of provincial CACC communicators to UTM services. These individuals are extremely difficult to replace given that there is no significant pool of resource / trainees from which to draw recruits.

2.7 PROTECTION FROM SERVICE INTERRUPTIONS

When the province was responsible for land ambulance services, the collective bargaining agreements required that essential service agreements be established prior to any wide scale service interruption (i.e., prior to a strike). The essential services agreements would define what base / minimum level service would be maintained during the service interruption to accommodate the most urgent needs.

When the responsibility for land ambulance service was transferred to municipalities this protection disappeared. Paramedics can go on strike, legally; that is all paramedics but those who work for hospital-based operators. The latter are restricted from legally striking by various provincial acts governing hospital employees.

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As a result of increasing pressures by Ontario municipalities, the province has recently introduced legislation, which will deem all paramedics “essential services”, similar to fire and police. Once the legislation is passed, paramedics will be restricted from legally going on strike during labour disputes, without first establishing an essential services agreement, regardless as to whether they work for a municipality, private operator or non-profit organization.

2.8 ROLE OF EMS IN HEALTH CARE

The ties binding EMS to the rest of the health care system are becoming more complex. In some communities Public Health officials are taking the view that their recently acquired EMS presents a cost-efficient alternative by which to deliver a variety of community health initiatives e.g., paediatric and elderly patient monitoring, home safety audits, immunization programs and public health care education. In these communities, EMS is staffed at a level commensurate with the performance of such functions.

Other communities are taking a more traditional view of EMS focusing on the primary functions namely, to provide rapid medical intervention in emergencies and to carry out non-emergent, but medically essential, patient transfers between medical facilities and institutions.

Many UTMs, including several served by Hamilton CACC, are finding it to be increasingly difficult to accommodate the rising demands for both emergent and non-emergent EMS services; so much so that some are endeavouring to assign a heavier emphasis to the former function (emergency response) at the expense of the latter (transfers).

As would be expected, such situations occasionally contribute to conflicts between local and provincial policies. Herein provincial CACCs play an important role namely, to ensure the highest calibre of ambulance service across Ontario, in conformance with the principles contained within the Ambulance Act.

3. ESSENTIAL ROLE PERFORMED BY PROVINCIAL CACCs

UTMs and provincially designated delivery agents are responsible to ensure the proper provision of land ambulance “fleet” operations within their jurisdictions. Their responsibilities include setting the level of coverage, the geographic deployment of resources, maintaining local response time performance, and with the assistance of the Base Hospital, ensuring the quality of the patient care administered by paramedics.

UTMs rely on MOHLTC for ambulance “communications” services, more commonly known as dispatch.

Dispatch is a major entry point into the health services system. It serves to:

- Ensure a rapid response to emergency situations by the closest available ambulance, regardless of jurisdictional boundaries;
- Provide an essential radio / telephone communications link between the paramedic in the field and the Base Hospital or receiving hospital;
- Routinely monitor hospitals' ability to accept new patients, and re-route and coordinate ambulance transportation when emergency rooms are at capacity;
- Efficiently co-ordinate non-emergent, but medically essential, patient transfers between medical facilities. Transfers are deemed to be medically essential if the patient is unstable, requires a stretcher or the accompaniment of an attendant during transport; and
- Manage the call records. The data maintained by CACC is the primary basis for planning, budgeting, cost-recovery and for monitoring ambulance fleet performance.

MOHLTC fulfills its responsibility for ambulance communications (dispatch) services through a system of 19 CACCs. Eleven of these communications centers including Hamilton CACC, are operated directly by the Ministry. Six CACCs are operated by hospitals on behalf of the Ministry, and two are operated on behalf of the Ministry by municipalities.

Most CACCs use a common computer-aided dispatch system known as ARIS (Ambulance Response Information System). The staff carry out their duties in accordance with provincially established policies and procedures. These are amended from time-to-time to accommodate the operating requirements of the local municipal ambulance fleet services.

Their relatively small number (19 in total), operating with common procedures, supported by provincial common and provincial tactical radio frequencies and a networked computer-aided-dispatch system has repeatedly enabled the CACCs

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to effectively function as the primary point for the coordination of emergency medical services in urgent situations (i.e., involving multi-vehicle accidents, fire, structural failure of buildings, severe weather and / or incidents of terrorism). In this role CACCs have in various instances:

- Quickly arranged for, deployed and coordinated large numbers of EMS across the province;
- Effectively coordinated the assembly and dissemination of emergency services information pertinent to the situation;
- Coordinated the deployment of emergency medical supplies;
- Monitored hospitals' ability to accept new patients, and coordinated EMS re-routing; and
- On behalf of the province, served as the principle point for emergency communications with local allied agencies (police and fire), provincial support agencies (e.g., OPP, Emergency Measures Ontario and Medical Air Transport), federal agencies, hospitals and public health agencies.

4. OVERVIEW OF LOCAL FLEET OPERATIONS

The following is a brief overview of the ambulance fleet operations within each of the local UTMs served by Hamilton CACC. The descriptions were prepared either by a representative of the UTM, or by IBI Group with input by the UTM. Key comparators are presented in Exhibit 4.1.

4.1 NIAGARA EMS

The Regional Municipality of Niagara assumed responsibility for the land ambulance “fleet” service on January 1, 2000.

The ambulance service, referred to as Niagara EMS, is operated on behalf of the Regional Municipality of Niagara by Hotel Dieu Hospital. The Hospital’s contract provides for an initial term of 5 years plus two two-year extensions, at the Region’s discretion.

Niagara EMS responds to approximately 61,000 calls per annum.

The Region of Niagara is a mix of urban and rural with 1,896 square kilometres and a permanent population of approximately 450,000. The area sees more than 14 million tourists per year. The employment base ranges from agricultural to high tech, to heavy industry.

Niagara EMS uses a combination of traditional station-based deployment and roaming paramedic response units (PRU). Niagara operates 13 emergency transport vehicles, 4 paramedic response units deployed in response zones, 4 transfer vehicles that are available to respond to emergencies should demand require it, and 3 float vehicles that service both transfers and emergencies.

In an effort to improve response times Niagara added 58,000 staffed hours in 2001. The following enhancements were introduced in April 2001 and have had a significant impact on response times.

- 4 paramedic response units (PRU) – 16/7 in pre-selected zones;
- 1 new 24/7 transport ambulance in Pelham;
- Additional 12/7 transport ambulance in St Catharines
- Additional hours to transfer units in Grimsby and St Catharines; and
- Additional “float” ambulance 12 hrs on weekends.

In addition to the significant service enhancements above, Niagara has introduced a number of initiatives to assist with the influx of tourists during peak summer months, including:

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- An additional 16/7 hr ambulance in Niagara Falls – May to September
- Marine Medics at special events
- Bike medics operating from May – September in the Falls area, as well as at special events.

Niagara EMS staffs four 10-hour Monday to Friday Primary Care Paramedic Units that are primarily used for transfers, although they are available for emergency responses as required. These ambulances do not work on a pre-booked schedule, which would be preferred to improve efficiency, but are dispatched on a call-by-call basis.

Niagara EMS, over the next three years, will staff all of its Emergency Transport Ambulances with one Advanced Care Paramedic and one Primary Care Paramedic. The Region currently has 54 ACPs and requires 36 more to reach full ACP staffing. Niagara Region and Niagara EMS in partnership with Niagara College and the Michener Institute will commence Advanced Care Paramedic training at Niagara College in November 2001.

Niagara EMS endeavours to operate a performance-based ambulance system. In this regard the Region has approved Phase 1 performance objectives of 8' 59" for urban areas and 15' 59" for rural areas of the Region. Phase 2 objectives will be based on best practices as determined from such initiatives as the CAO's benchmarking project and revised Provincial standards.

The response times are monitored and quarterly reports taken to Committee and Council with recommendations for corrective action where necessary. The Region has retained the services of Bell Actimedia to produce response time and utilization mapping as a component of the ongoing monitoring and reporting of response time status. According to present records, the ambulance system meets the urban 8' 59" response 68% of the time.

In Niagara Region's view the current jurisdictional separation of ambulance fleet and communications functions, coupled with the differing operating styles (i.e., the former being performance-based and the latter not being performance driven in the same sense as the fleet operations) creates a host of challenges for both the Region, and for the management and staff of Hamilton CACC.

4.2 HAMILTON EMS

The Regional Municipality of Hamilton-Wentworth, now the New City of Hamilton assumed responsibility for the delivery of ambulances services on August 1, 2000.

The service is part of the Hamilton Emergency Services Department, which also includes the Hamilton Fire Department.

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Hamilton EMS responds to approximately 76,000 calls per annum.

The city is 1,358 square kilometers and has a population of 625,000 with a sprawling urban area, several suburban communities and large rural area. Hamilton has much of its economical base in heavy and light industry.

The fleet service is divided into three components: vehicles dedicated to emergency response, demand units and transfer units.

- ***Vehicles dedicated to emergency response:*** There are 4 non-transport advanced care paramedic response units and 10 ambulance transport units. The units are dispersed among 14 fire stations throughout the City. The response vehicles are located in the urban areas of the city and frequently roam in assigned zones to reduce response times. Ambulance transport units are staffed primarily with PCPs. With the graduation of 14 ACP by the end of November (and another 8 in March 2002) the communities of Waterdown, Stoney Creek, Ancaster, East Hamilton, downtown Hamilton and the West Mountain will have ACP staffing. Hamilton's target is to have 33% of the 160 paramedics trained to the ACP level and then re-evaluate the human resource needs based on client objective outcomes.
- ***Demand Units:*** Consists of 4 ambulance transport units that back up the emergency service units and are used for transfers when not utilized in the emergency service. Three of these vehicles start their shift at the Fleet Centre and are staffed with PCPs. The 4th unit is stationed at John Street station providing peak loading coverage during those hours. None of these units remain at the Fleet Centre during their shift. They are deployed geographically to provide balanced emergency coverage.
- ***Transfer Units:*** The transfer fleet is located at the Fleet Centre. It consists of 4 transport units that provide inter-facility transfers for hospitals and community agencies. On occasion vehicles may be called upon to provide emergency response if they are closest to the scene. Two of the vehicles are designated as "performance cars". They provide scheduled transfers that are booked by midnight on the previous day. Through an agreement with Dispatch, paramedics on these vehicles are allowed to plan their own schedules. They are required to complete 8 transfers daily (and to operate a minimum of 6 hours daily). Once these requirements are met the crew is finished for the day.

Hamilton's goal is to achieve a 90th percentile response time of 8' 59" (T0 to T4) in urban areas and 15 minutes in rural areas.

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Hamilton EMS is evolving to a performance-based ambulance system, using as a basis the following performance measures: clinical reliability, response time performance, cost effectiveness and unit hour productivity.

4.3 HALDIMAND COUNTY AMBULANCE SERVICE

The Corporation of Haldimand County came into existence on January 1, 2001. Currently the local ambulance service is delivered by Haldimand War Memorial Hospital based in Dunnville, as the contracted operator to the County. The County plans to assume direct responsibility for the delivery of ambulance services on February 1, 2002. The service will be delivered by the Land Ambulance Service Division.

The Land Ambulance Service Division is part of the Haldimand County Community Services Department, which also includes the Fire Department, Leisure Services, Heritage & Culture, Grand View Lodge (LTC Facility) and Libraries.

Haldimand County Ambulance Service responds to approximately 7,000 calls per annum.

The County is located on the north shore of Lake Erie and is well connected by a series of provincial highways such as Highway 6 (North/South) and Highway 3 (East/West). The County is only 30 minutes south of the John C Munro International Airport in the City of Hamilton. The County is approximately 1,299 square kilometers in area. It is largely rural. Much of the population of 41,112 is located in small communities such as Caledonia, Dunnville, Hagersville, Cayuga and Jarvis. Much of the County's economical base is in the agricultural and tourism industries. There is some light manufacturing and heavy industrial.

The ambulance service has 7 ambulances and 3 permanent base locations:

- Dunnville - 24 hour, 7 day per week on site coverage. This station is being relocated;
- Hagersville - 24 hour, 7 day per week coverage; and
- Caledonia - currently 16 hour weekends. Seeking a site for a permanent location.

Planned enhancements include increasing the Caledonia coverage to 24 hour, 7 day per week, and introducing summer coverage from May to September in Selkirk beginning in 2002.

The ambulance units are presently staffed with PCPs. The County expects to introduce an ACP capability over time (proposed target is to train 65% of the paramedics to the ACP level).

Haldimand County's long term goal is to reduce response times to the 1996 90th percentile value of 15 minutes (T2 to T4), or less, in all areas of the county. The

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County plans to evolve from “level-of-effort” to a “performance-based” ambulance system over time. The immediate priority however, is to transition from contractor to a direct delivery model.

4.4 NORFOLK COUNTY AMBULANCE SERVICE

The Regional Municipality of Haldimand-Norfolk assumed responsibility for the land ambulance fleet service on February 1, 2000. The Corporation of Norfolk County came into existence on January 1, 2001. The County assumed the responsibility for the land ambulance fleet service upon its inception.

The ambulance service is currently provided by two operators functioning under contract to the County. Norfolk County is going to a direct delivery mode of operation on December 1, 2001.

Norfolk County Ambulance Service responds to approximately 8,000 calls per annum.

Norfolk County is a mix of urban and rural with 1,628 square kilometres and a permanent population of approximately 60,000. The area attracts over 1 million tourists per year. The employment base ranges from agricultural, to tourist oriented, to heavy industry.

Norfolk County Ambulance Services use a traditional station-based deployment model operating transport ambulances out of stations located in Port Rowan, Langton and Delhi, a post in Port Dover and two in Simcoe. Planned enhancements include establishing an ambulance headquarters in Simcoe and a post in Waterford. There are currently 11 emergency transport vehicles, including spares.

4.5 BRANT COUNTY AMBULANCE SERVICE

The Corporation of the County of Brant assumed responsibility for the delivery of land ambulance services on August 29, 2000.

The ambulance service is a stand-alone department within the County and reports directly to the CAO and the Ambulance Committee. The Corporation of the City of Brantford is served by the County service and has representation on the Ambulance Committee.

Brant County Ambulance Service responds to approximately 17,000 calls per annum.

The County of Brant and The City of Brantford have a combined population of 121,000 and cover 1,091 square kilometers. 82% of the population lives in the urban centers of Brantford and Paris with the 18% balance being rural residents. Employment and economic base ranges from agricultural to high tech to heavy industry.

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Brant County operates 5 emergency transport ambulances and 1 emergency response unit out of 3 stations using traditional station-based deployment.

The County goal is to achieve a 90th percentile response time of 8' 59" in urban areas and 15' 59" in the rural areas. According to present statistics, the ambulance system has an urban 90th percentile response time of 9' 19" and a rural 90th percentile response time of 16' 18".

Hospitals, nursing homes, retirement homes and homes for the aged are being instructed to utilize alternate transport providers for those patients and residents that are not deemed to be medically unstable, do not require a stretcher, and do not require a paramedic or trained escort during transport. It is anticipated that up to 50% of code 1 and code 2 calls could be transported by alternate means.

4.6 SIX NATIONS AMBULANCE SERVICE

The Six Nations of the Grand River First Nation assumed responsibility for land ambulance services on January 1, 2000. Six Nations Ambulance Services operates a single stretcher transport ambulance, from a base located in the Village of Ohsweken. The vehicle is staffed 24 / 7 with Primary Care Paramedics. Six Nations Ambulance Services responds to about 3,500 calls per annum. Six Nations goal is to reach a 90th percentile response time of 12 minutes.

The Six Nations of the Grand River is largely rural with approximately 200 square kilometers and a permanent population of approximately 15,000 persons. The area sees over 50,000 tourists per year.

To improve coverage and response times, Six Nations is considering the following enhancements: a second emergency transport unit to be available weekdays from 10 am to 10 pm, upgrading to Advanced Care Paramedics and an ACP First Response Unit. In addition Six Nations is considering up-staffing for various annual public events including the following: Six Nations of Grand River Champions of Champions Pow Wow, Six Nations Fall Fair and Victoria Day celebrations (which locally is referred to as "Bread and Cheese").

5. STAKEHOLDER CONSULTATION

IBI Group's work program placed considerable emphasis on stakeholder consultation as a principle mechanism by which to identify issues, concerns and potential solutions. The information gathered is organized below, under two headings:

- ***Local Stakeholders' Opinions of Hamilton CACC:*** These are the views expressed by representatives of the five UTM's served by Hamilton CACC, their ambulance operators and paramedics, local hospitals (and base hospital programs); and locally based fire and police services; and
- ***Views Expressed by Hamilton CACC Personnel:*** These are the opinions expressed by Hamilton CACC management and communicators (dispatchers).

5.1 LOCAL STAKEHOLDERS' OPINIONS OF HAMILTON CACC

Generally most of the stakeholders, with whom we consulted, were supportive of Hamilton CACC personnel and the work, which they endeavour to carry out. Most stakeholders recognize that much is expected of the personnel and that they are doing the best they can with the resources that are currently available.

This is not to say that problems / frictions do not arise. Nor is this intended to suggest that all stakeholders are comfortable with the operational performance of Hamilton CACC. Problems do arise (ever more frequently, in the opinion of some stakeholders) and major incidents have been reported.

From one group of stakeholders (Niagara Region) we received considerable documentation citing numerous situations, where the performance of CACC was less than desirable. These included situations in which:

- Hamilton CACC communicators were not sufficiently familiar with the UTM's local geography;
- Delays in ambulance responses were encountered;
- Ambulances were sent to wrong addresses;
- In their opinion, Hamilton CACC communicators did not adhere to provincial policy or to local policy approved by the Hamilton Field Office;
- CACC's reaction time exceeded the provincially mandated 2 minutes;
- Inappropriate tiering of fire departments; and
- Delays in notifying hospitals of incoming ambulances.

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Most stakeholders will readily agree that the source of most of the problems / frictions encountered, is not the current personnel but rather the conditions under which the personnel operate and the absence of state-of-the-art tools (technological resources). In their opinion the CACC is seriously understaffed and the tools at hand are both substandard and unreliable. In their view, both these issues must be addressed if the CACC's performance is to be improved.

There is general consensus that CACC is a major entry point into the health services system. Moreover, that having a sufficient number of qualified / experienced communicators (dispatchers) is key to the performance and quality of the service provided by the CACC. Clearly, there is recognition that CACC communicators are the "key personnel" entrusted with the responsibility to make appropriate decisions which will provide rapid ambulance response / medical intervention to emergency situations.

While much is expected of CACC personnel entrusted with the above very important responsibilities, in the opinion of several stakeholders the staff do not appear to be valued by the employer. In this regard they cite the following points, which are commonly known within the local land ambulance community:

- Relatively low wages rates, which CACC communicators are paid compared to their emergency counterparts in fire and police services;
- Relatively high workload compared to their emergency counterparts;
- Long hours and high levels of stress.

To many local stakeholders, it is abundantly clear that these are primary factors, which have contributed directly to the following difficulties experienced by Hamilton CACC:

- Exodus of experienced communicators;
- Relatively high rate of staff turnover;
- Large proportion of the existing staff having less than 3 years on-the-job experience;
- Frequent downstaffing;
- Difficulties to maintain minimum levels of communicator coverage on all shifts; and
- Reduced accountability for less-than-desirable CACC performance.

Several stakeholders are reasonably familiar with what it takes to properly operate an emergency service dispatch operation (i.e., ambulance operators and base hospital staff who regularly interact with CACC, as well as fire and police

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services who operate their own dispatch centres). These stakeholders emphasize that for Hamilton CACC's performance to improve, it will require state-of-the-art technology, in addition to additional staff resources. In their view the present radio / telephone communications systems are unreliable, the computer aided dispatch system (CAD) is out-of-date and not particularly user friendly, and the mapping information is substandard.

These stakeholders point out that while more sophisticated CACCs such as Toronto are able to track their ambulance fleet and identify the closest available ambulance on an electronic grid, using computer-based GIS technology and automatic vehicle locators (AVL), Hamilton CACC dispatchers (and paramedics operating within the catchment area) continue to rely upon paper-based map books, as their primary tool. These are not always up-to-date or accurate; nor are they user friendly.

Poor communications by radio / portable telephones is particularly prevalent in the Niagara area. The problem is attributed to several factors: geography and local features, lack of sufficient transmission towers and because of their proximity to the U.S. border, restrictions on licenses and power levels.

Niagara Region stakeholders (municipal representative, ambulance operator and base hospital medical director) have repeatedly expressed their concerns on these issues to MOHLTC. According to them, the problems persist.

To stakeholders, particularly Niagara Region, the Ministry's inability to resolve these matters is a source of considerable frustration, since it denigrates the public's confidence in their ability to properly provide quality EMS services. According to municipal officials, the public does not differentiate between Ministry operated dispatch and municipally operated ambulance fleets. Of the two functions, only the latter bears a public profile. Accordingly, if a member of the public experiences a delay in service, they automatically assume it is because of the municipality's inability to operate the system properly – despite the fact that the problem may actually lie elsewhere (as is their contention).

5.2 VIEWS EXPRESSED BY HAMILTON CACC PERSONNEL

Most of the CACC personnel with whom we consulted readily confirmed the opinions expressed by the local municipal stakeholders, as described above.

In the opinion of CACC management and communicators, the absence of a stable CACC environment coupled with staff shortages, a high rate of turnover in staff, insufficient training, and substandard CAD and radio / telephone systems, are negatively impacting on their ability to deliver an effective dispatch operation.

In their view recruitment and retention of qualified communicators are formidable challenges. CACC personnel confirm that the centre is understaffed. Due to staff shortages, shifts are routinely downstaffed. It is becoming increasingly difficult to maintain a minimum level of communicator coverage on all shifts (particularly

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evening and weekend shifts). A relatively large proportion of the communicators have less than 2 to 3 years on-the-job experience.

It is the opinion of Hamilton CACC communicators that the situation is reaching “crisis proportions”.

CACC personnel readily confirm that many of the communicators who left, have taken jobs with other emergency service organizations for better pay and less stress.

Hamilton CACC communicators were asked to comment on the difficulties to recruit and retain staff. They offer the following opinions:

- ***Relatively low wage rate is a key factor.*** Hamilton CACC communicators earn a maximum of \$18.66 hourly (\$39,000 annual). In comparison, Toronto CACC communicators are paid \$25.17 hourly (\$52,300 annual)¹; and locally based police and fire dispatchers (i.e., in Hamilton / Niagara area) are paid between \$21.50 and \$27.21 hourly (\$44,700 and \$56,600 annual);
- ***Relatively high workload & stress are key factors.*** The staffing complement is far short of what it should be. This has been the situation for several years and there are no signs of improvement. Communicators are pressed regularly, to work overtime to fill shifts. This is taking a toll on the communicators (i.e., in terms of health and impact upon personal lives) as is demonstrated by the inordinate amount of time being taken off for reasons attributed to illness². Communicators are not the only ones affected by the current work environment. IBI Group is advised that 1 Shift Supervisor is on an extended leave for medical reasons; also, 1 Operations Manager³;
- ***Absence of a stable organization & the apparent absence of career path opportunities are key contributing factors.*** The relatively rapid rate of staff turnover is a destabilizing influence. Another is the fact that most of the management positions at Hamilton CACC are being filled temporarily by staff functioning in an “acting” capacity. There is very little opportunity for professional development (career advancement). On the other hand, there appear to be ample opportunities for career advancement at other locally based emergency services organizations (e.g., fire and police dispatch);
- ***12-hour shifts are not an issue.*** Many of the communicators were polled on this question. Almost all identified 12 hours to be the preferred shift length;

¹ Note Toronto CACC dispatchers are seeking wage parity with Toronto Fire dispatchers. If successful, their wage will increase by an additional \$2 to \$3 dollars, hourly.

² According to records provided to IBI Group by Hamilton and Toronto CACCs, on average, each Hamilton CACC communicator takes off 37% more time for reasons attributed to illness, than do their Toronto CACC peers.

³ This individual has recently returned; however for medical reasons their participation at CACC will be restricted to light duties.

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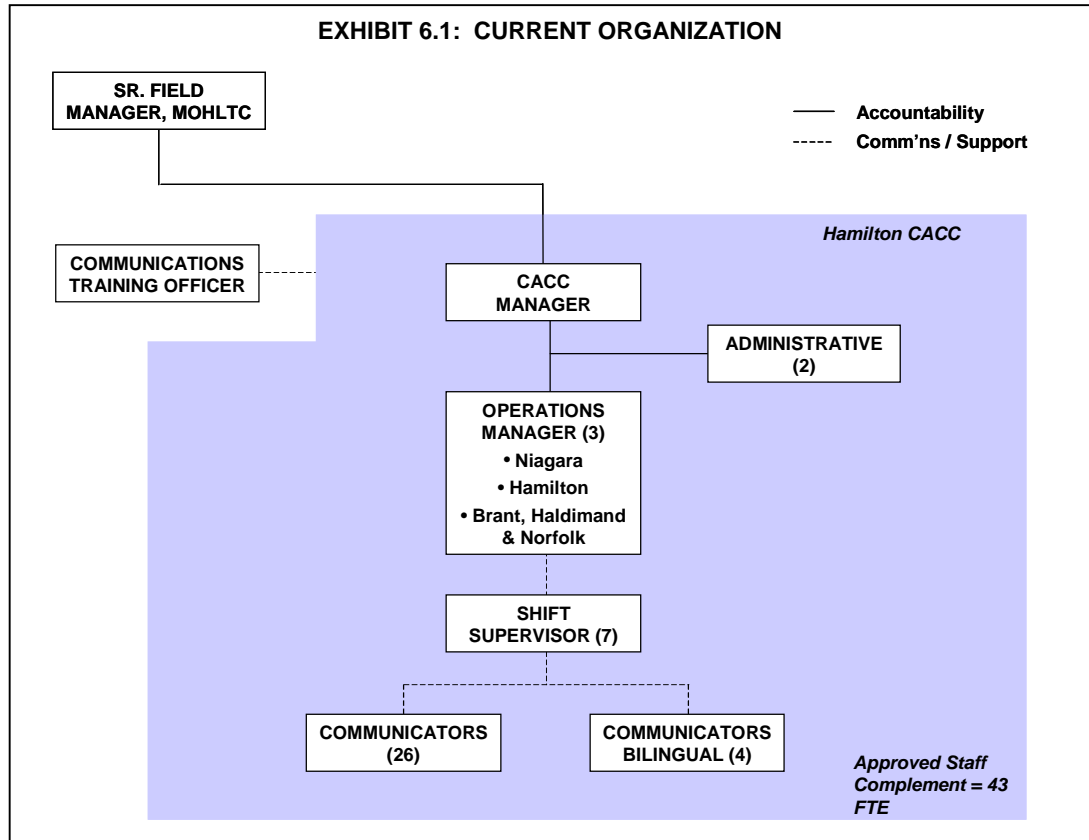
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- **Concern over job security.** There appears to be some apprehensiveness about job security. Prior to the establishment of the current amalgamated Hamilton CACC, in 1996-97, the catchment area was served by 4 individual CACCs located in St. Catharines (Hotel Dieu Hospital), Simcoe (Green's Ambulance), Brant and at the Hamilton Civic Hospital. Some of the staff of those centres were transferred to the newly created amalgamated CACC. Others were offered positions conditional upon their successfully demonstrating certain entrance requirements. The process resulted in some staff losing years of seniority, benefits and / or their full-time classifications. Staff are concerned that this may reoccur if the responsibility for ambulance dispatch is transferred to a local UTM;
- **A related issue is the practice of "contracting" for employment as opposed to hiring full time classified staff.** The communicators recognise the reasons why this practice is used i.e., length of time and red-tape involved to obtain provincial approval to proceed with competitions for classified full-time staff, the need to protect positions when staff are temporarily assigned to fill more senior vacancies on an "acting" basis, etc. However, they point out that it does not provide new recruits either benefits or prospects for long term job security;
- **Matter of self-esteem.** According to several Hamilton CACC communicators, there is little if any evidence that the employer appreciates their work. To add insult to injury they often hear colleagues describe ambulance dispatch as "the place where injured paramedics go to die". Not only is this demoralizing, but it also clearly demonstrates a lack of understanding of the tests and training which new recruits must pass before being hired-on as dispatchers. Staff (and stakeholders alike) point out that in several North American and European jurisdictions the situation is completely different. There, communicators are regarded highly and even experienced paramedics must compete to fill a vacant communicator position.

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6. HAMILTON CACC: ORGANIZATION & MANAGEMENT



6.1 CURRENT ORGANIZATION & MANAGEMENT

As shown by Exhibit 6.1, Hamilton CACC has an approved complement of 43 FTE, made up as follows:

CACC Manager

The CACC Manager reports directly to the Sr. Field Manager – EHS Field Office 2 (Hamilton). The Manager is responsible for ensuring the provision of effective, cost-efficient and quality ambulance dispatch and communications services. According to the Manager's job description, specific responsibilities include:

- Planning, development, evaluation, quality assurance, operational control and administration of CACC;
- Assist in the development of local policies and procedures, which will respond to community needs, ensure effective and integrated use of all available

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resources, and provide the public with optimum ambulance service (both emergency and routine);

- Plan, organize, supervise and manage the fiscal, human and technical resources including recruitment, staff training, computerized mapping and preventative maintenance and repair of CACC communications systems;
- Identify daily operational discrepancies, investigate and resolve complaints, and provide written reports and verbal advice to observed or recorded system failure;
- Promote good public and community relations, and effective working relationships with municipal agencies, hospitals and other stakeholders;
- Develop and maintain data and records systems and resource inventories of workload, call volumes, priorities, coverage patterns, response times, etc, to support decision making, planning and analysis of ambulance system performance and effectiveness.

Operations Managers

There are 3 Operations Manager positions. Under the general supervision of the CACC Manager, the Operations Manager is responsible to oversee the operational and technical issues of the centre 24 / 7, and to ensure that optimum service is maintained. For logistical purposes one Operations Manager is responsible to deal with Niagara Region's needs, another is responsible for the City of Hamilton, and the third is responsible for the three relatively smaller UTMs (Brant, Haldimand and Norfolk). According to the Operations Manager's job description specific responsibilities include:

- Work with Shift Supervisors to ensure effective and timely transfer of patients on an emergency and non-emergency basis, and in a cost-effective manner;
- Monitor and evaluate the operations on an ongoing basis and recommend changes in operating policy, procedures, practices and automated systems, as appropriate;
- Provide administrative support i.e., assist in staff recruitment, staff scheduling, records management, handling of grievances and contracting for non-ministry services;
- Carry out front line staff performance appraisals;
- Conduct call reviews and investigate complaints i.e., from patients, hospitals, public, fleet and agencies; and recommend corrective action, including staff training or discipline;

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- Ensure ongoing operation of computer systems and other specialized equipment i.e., radio and telephone systems.

Shift Supervisors

There are 7 Shift Supervisor positions, although not all of the positions are presently filled. Under the general supervision of the Operations Manager, the Shift Supervisor is responsible for services performed by dispatchers and call takers, and to provide group leadership and technical direction. According to the approved job description specific responsibilities include:

- Ensure that call takers and dispatchers respond promptly to all requests for routine and emergency ambulance services;
- Assume dispatch duties when required;
- Assist the Operations Manager with administrative and operational duties including: ongoing monitoring and evaluation of the operations and technical equipment; reports of incidents and complaints; amend shift schedules when required; input to staff performance appraisals;
- Liaise with fleet and resolve complaints when the Operations Manager is absent;
- Ensure local area mapping data is updated as required;
- Work with new staff, and assist with all aspects of ongoing staff training and use of technical equipment.

Communicators

The approved communicator complement provides for 30 FTE⁴. Four positions are designated bilingual positions. As described fully in Section 6.1 of this report, there are numerous vacancies at this level. Communicators fulfill two functions: call taking and dispatch.

The “call taker” is responsible to assemble information pertinent to the call within as short a time span as possible including an accurate determination of the nature and location of the call. They assign a priority to the call using a prescribed medically driven algorithm. The algorithm used by Hamilton CACC is the Ministry’s Dispatch Priority Card Index (DPCI). Subsequently the call is forwarded to a dispatcher (refer to Exhibit 6.2). If the patient is in distress and / or if the ambulance response is expected to be delayed, the call taker tiers the local

⁴ This figure does not include the backfill requirement i.e., the additional staff support, which is required to cover communicator “paid absences” due to illness, vacation, training, etc. Hamilton CACC operating budget includes a 26% provision over the base operational requirement, for backfilling. CACC Managers are expected to use these funds to secure additional staff resources (either full time, part time, or through overtime shifts) to cover paid absences.

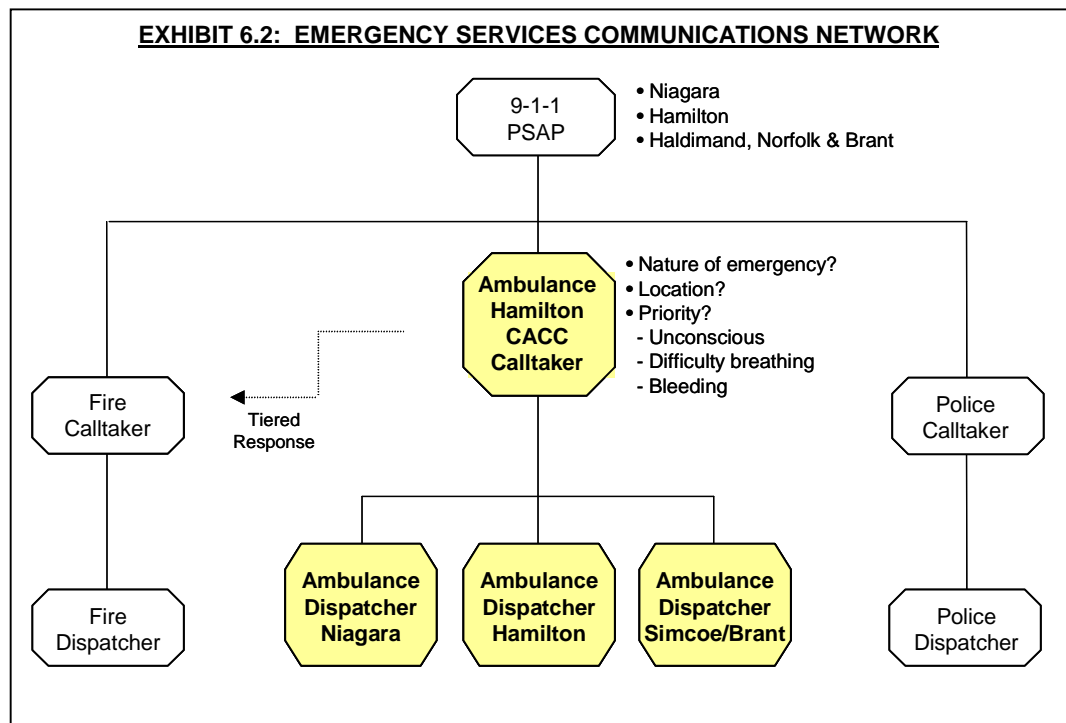
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fire department for assistance and may also stay on the line with the caller to provide pre-arrival first-aid;

The “dispatcher” is responsible for selecting the appropriate ambulance resource and dispatching it to the call. In most cases this involves selecting the closest available ambulance. In UTMs with both an ALS and BLS capability, the task also involves selecting the appropriate life support level of response. The dispatcher is required to carry out these responsibilities within as short a time as possible. The following are other duties the dispatcher is expected to perform throughout their shift:

- Provide paramedics with a communications “life line” and accommodate their requests for assistance;
- Help determine the appropriate destination for patients by routinely monitoring hospitals’ ability to accept new patients and re-routing ambulances when emergency rooms are at capacity;
- Ensure adequate ambulance coverage within the coverage area, by tracking EMS vehicle movements, monitoring their availability (status), deploying ambulances to strategic standby locations and where required; and
- Coordination of resources i.e., allied agencies, neighbouring CACCs and air ambulance.



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The operational design of the CACC provides separate consoles (stations) for call taking and dispatch. This is a commonly used arrangement by emergency service organizations, which recognises that:

- Call takers must give incoming callers their undivided attention. Callers are often distraught and / or require first aid instruction over the telephone. Call takers must be able to concentrate on these matters, without interruptions i.e., to respond to radio transmissions from paramedics and allied agencies assigned to other calls. Those are duties assigned to dispatchers.
- Dispatchers carry out an array of time sensitive activities, which involves extensive and frequent interaction with paramedics, allied agencies and hospitals (as described above); while also continuing to ensure appropriate area coverage. Given the multitude and complexity of the tasks involved in dispatching, it would be unreasonable to expect dispatchers to properly fulfil these obligations and concurrently carry out call taking.

MOHLTC endeavours to train all new recruits to perform at both levels: as call takers and dispatchers. They do so to maintain maximum operational flexibility. The intake training program comprises approximately 1000 hours of training over a 6 to 7 month period.

New recruits enter the system at a CO1 level (Communications Officer 1) and are given 480 hours of training / mentoring as call takers. Once they demonstrate proficiency at this function, they undergo an additional 520 hours of training / mentoring as dispatchers. At Hamilton CACC a key objective of this portion of the training program is to ensure that recruits are capable to dispatch ambulances from each of 3 dispatch consoles i.e., 1 assigned to cover the Niagara area, 1 to the Hamilton area and 1 to serve Haldimand, Norfolk and Brant. Upon successful completion of the program the recruits are reclassified to the CO2 level (Communications Officer 2).

MOHLTC has recently set up an ancillary program to recruit and train “basic call takers”. This program is not intended to replace the existing intake training program, which as noted above is designed to train full-functioning dispatchers. Rather, it is intended to help alleviate the immediate, critical shortage of trained CACC communicators, province-wide. As it takes less time to train a basic call taker, a greater number can be recruited in a shorter period. This in turn, will allow CACC management to re-deploy the full-functioning communicators to the dispatch consoles.

Administrative

There are two administrative support; an Administrative Assistant and a Clerk / Receptionist.

6.2 EXTERNAL RESOURCES AVAILABLE TO HAMILTON CACC

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Hamilton CACC receives technological and systems support from the Technical Services Unit (Toronto) and communications training support from the Hamilton Field Office.

MOHLTC recently introduced a newly created Communications Training Officer (CTO) position province-wide. The Hamilton CACC CTO is assigned to the Field Office based in Hamilton. Their immediate priorities are to develop and implement comprehensive intake and ongoing staff training programs, of which QA is to be an integral component.

MOHLTC also recently introduced a newly created CACC Technical Coordinator (CTC) capability province-wide. CTC was recently assigned to work with Hamilton CACC. The incumbent filling this newly created position reports to the Technical Services Unit in Toronto. Their primary responsibility is to strategically support the CACC's technological systems (i.e., computers, CAD and radio / telephone).

6.3 OPERATIONAL STRUCTURE & ISSUES

Consoles, Shifts & Platoons

Hamilton CACC is equipped with 11 consoles (communicator stations):

- 1 supervisor console;
- 3 call taker consoles;
- 3 dispatch consoles, assigned geographically – 1 to Niagara, 1 to Hamilton and 1 to Haldimand / Norfolk / Brant (simply referred to by communicators as Simcoe/Brant);
- 3 backup dispatch consoles, also assigned geographically; and
- 1 transfer console.

Most shifts either commence at 07:00 hours or 19:00 hours. To cover off the weekday – day peaks, some weekday shift starts are staggered i.e., with staff reporting to work at 08:00 hours, 10:00 hours, etc. The general practice is that communicators and shift supervisors work 12-hour shifts, regardless of the start time.

Hamilton CACC operates on a system of 5 platoons; of which 4 platoons are designed to provide round the clock coverage, seven days a week. The 5th platoon provides the additional coverage, which is required on weekday – days (i.e., to accommodate the additional urgent and non-urgent transfer requirements which peak during this period). This is a commonly used arrangement by emergency service organizations.

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All platoons are supposed to be staffed with 1 supervisor and ample communicators, to fulfil the “call taking” and “dispatch” coverage requirements on all shifts. At a minimum the composition of each platoon is supposed to include 3 “experienced” communicators – each having intimate familiarity with at least one of the following three geographic areas: Hamilton; Niagara; and the combined jurisdictions of Brant, Haldimand and Norfolk. Staff with less experience and new recruits (trainees) are to form the balance of the platoon complement.

The staff within each platoon are to operate and rotate together. This also, is a commonly used arrangement among emergency service organizations. It promotes teamwork, provides consistency and affords staff the opportunity to learn from one-another’s strengths.

Supervisors are expected to take accountability for the performance of their respective platoons.

Operational Shortcomings

While the platoon structure is sound, the system is not operating as originally intended, due to the shortage in staff at both the supervisory and communicators levels.

One of the 5 platoons (weekday –day platoon) operates without a supervisor.

There are not enough communicators, either full time or part time, to ensure that each platoon is fully staffed with a proper balance of experienced / inexperienced staff, or staff having intimate knowledge of each municipal jurisdiction.

Platoons are understaffed by an average of 2 communicators. Without a full platoon complement CACC is unable to:

- Fulfil the “call taking” and “dispatch” coverage requirements on all shifts. The problem is particularly prevalent at night and on weekends. During these periods the minimum staffing is 5 communicators (minimum – not desirable). Frequently Hamilton CACC is unable to meet this minimum staffing requirement;
- Maintain separation of “call taking” and “dispatch” functions (which as described previously, is essential to the optimal performance of each function). Due to the current severe shortage of staff, some communicators must alternate between the two roles, while endeavouring to accomplish both. This significantly increases the job complexity, the stress and the likelihood of errors in the performance of both jobs; and
- Uphold its responsibility to maintain quality and accountable communications performance.

To cover off the minimum staffing requirements, communicators are pressed to put in extensive overtime – regardless of level of experience or degree of

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geographic familiarity. Also, there is significant reliance on CACC management, who are routinely called upon to assume a communications function. Despite these efforts, the problem persists⁵.

6.4 COMMUNICATOR WORKLOAD

Ambulance Calls Dispatched

Hamilton CACC handles between 185,000 and 190,000 ambulance calls annually. The majority of these ambulance calls, some 170,000, are “patient” centred i.e., ambulances dispatched in response to emergent needs (codes 3 and 4), non-emergent patient transfers (codes 1 and 2) or to provide standby coverage (code 8).

The remainder of the calls, some 15,000 to 20,000, are “fleet” or service centred involving administration, downstaffing and vehicle maintenance (codes 0, 7 and 9 respectively).

Exhibit 6.3 shows that about 45% of the patient centred calls are dispatched to locations in the City of Hamilton; 36% are dispatched to locations in the Regional Municipality of Niagara; 10% to locations in the County of Brant; and 9% to locations in the recently restructured Counties of Haldimand and Norfolk.

EXHIBIT 6.3		
<u>CURRENT ANNUAL CALLS DISPATCHED BY HAMILTON CACC</u>		
<u>UTM</u>	<u>No.</u>	<u>%</u>
• Brant	16,700	10%
• Haldimand & Norfolk	15,100	9%
• Hamilton	76,300	45%
• <u>Niagara</u>	<u>61,200</u>	<u>36%</u>
• Total	169,300	100%
ROUND TO:	170,000	

Exhibit 6.4 shows the growth in calls dispatched by Hamilton CACC over the 5-year period 1996 to 2000. According to the data shown, the volume of calls dispatched by Hamilton CACC is increasing at an average annual rate of 9% per annum (approximately 10,400 calls annually).

⁵ IBI Group is advised that four “call takers” have recently been redeployed to Hamilton CACC from other areas, on an interim basis. These are individuals trained in basic call taking functions. They are not full-functioning dispatchers. Although not an ideal solution, according to CACC management this action is helping to provide some interim measure of relief.

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Forty-five percent (45%) of this average annual increase originates in Hamilton; 32% originates in Niagara; 13% in the restructured Counties of Haldimand and Norfolk; and 10% in Brant.

Approximately 20% of all calls dispatched by Hamilton CACC are non-emergent calls (codes 1 and 2), 55% are emergent calls (codes 3 and 4) and 25% are standby calls (code 8).

Non-emergent call volumes are increasing at an average annual rate of 2% per annum (650 calls annually). Emergency calls are increasing at an average annual rate of 8% per annum (5,140 calls annually). Standby calls are increasing at an average annual rate of 25% per annum (4,630 calls annually).

Over 50% of the annual increase in standby calls originate in the City of Hamilton (approximately 2,500 calls annually). Haldimand and Norfolk Counties generate a disproportionate volume of standby calls; approximately 32% of the call volume dispatched to those jurisdictions are standbys.

Inter-Facility Transfers

Hamilton CACC currently dispatches approximately 28,000 transfers annually between health care facilities i.e., hospitals, psychiatric facilities, long term care, etc.

Exhibit 6.5 shows that about 39% of these transfers originate in the City of Hamilton (11,100 transfers); 37% originate in the Regional Municipality of Niagara (10,400 transfers); 13% in the Counties of Haldimand and Norfolk (3,800 transfers); and 11% in the County of Brant (3,100 transfers).

Approximately 82% of the patient transfers are categorized as non-emergencies (codes 1 and 2) and 18% are categorized as emergencies (codes 3 and 4).

Inter-facility transfers are increasing at an average annual rate of 3% per year (700 transfers annually). This growth rate is considerably lower than the 9% average annual rate of increase in the total ambulance calls dispatched.

As shown by Exhibit 6.6, in 1996 inter-facility transfers represented 21% of all ambulance calls dispatched by Hamilton CACC. Currently, inter-facility transfers represent 17% of the ambulance calls dispatched.

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Telephone & Radio

Hamilton CACC management recently tracked the volume of telephone and radio calls over a 24-hour weekday period, from Wednesday March 7, 2001 (19:00 hours) to Thursday March 8, 2001 (18:59 hours). The results, presented in Exhibit 6.7, help to demonstrate the amount of work involved in EMS communications.

EXHIBIT 6.7: RADIO & TELEPHONE TRANSACTIONS								
	TELEPHONE						RADIO	
	<u>Incoming</u>	<u>Outgoing</u>	<u>Total</u>	<u>Hourly</u>	<u>911</u>	<u>% Incoming</u>	<u>Outgoing</u>	<u>Hourly</u>
Day (12 Hr)	680	362	1,042	87	97	14%	1,765	147
<u>Night (12 Hr)</u>	<u>207</u>	<u>86</u>	<u>293</u>	<u>24</u>	<u>71</u>	<u>34%</u>	<u>1,175</u>	<u>98</u>
Total (24 Hr)	887	448	1,335	111	168	19%	2,940	245
Est. Annual	277,600	140,200	417,800		52,600		920,000	

It should be noted that current CACC technological resources do not automatically keep track of this information and that much of the data was recorded manually.

- **Day Shift.** The CACC received 680 incoming telephone calls; 97 of these incoming telephone calls (14%) were 9-1-1 calls. Outbound telephone calls numbered 362. The CACC averaged 87 telephone calls per hour. In addition there were 1,765 outgoing radio transmissions; this translates to 147 outgoing radio transmissions per hour.
- **Night Shift.** The CACC received 207 incoming telephone calls; 71 of these incoming telephone calls (34%) were 9-1-1 calls. Outbound telephone calls numbered 86. The CACC averaged 24 telephone calls per hour. In addition there were 1,175 outgoing radio transmissions; this translates to 98 outgoing radio transmissions per hour.

Ambulance calls dispatched over this 24-hour period numbered 541 calls (codes 1 to 4 plus 8); 368 calls were dispatched on the day shift and 173 at night.

IBI Group prorated the above information to an annual equivalent, using as a basis the previously estimated annual volume of ambulance calls dispatched i.e. 169,300 calls per year. The results suggest that annually, Hamilton CACC receives approximately 278,000 incoming telephone calls; and that it processes 140,000 outbound telephone calls and over 900,000 outgoing radio transmissions.

Hamilton CACC management also recorded the amount of time spent on each telephone transaction. The results are summarized in Exhibit 6.8.

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The length of time to answer an incoming telephone call averaged 5 seconds. Call durations averaged 87 seconds for incoming telephone calls and 48 seconds for outgoing telephone calls. Callers were placed on hold an average of 47 seconds per incoming telephone call.

Over a 24-hour period the time “on hold” totals 11.7 hours.

EXHIBIT 6.8: TIME SPENT ON TELEPHONE TRANSACTIONS

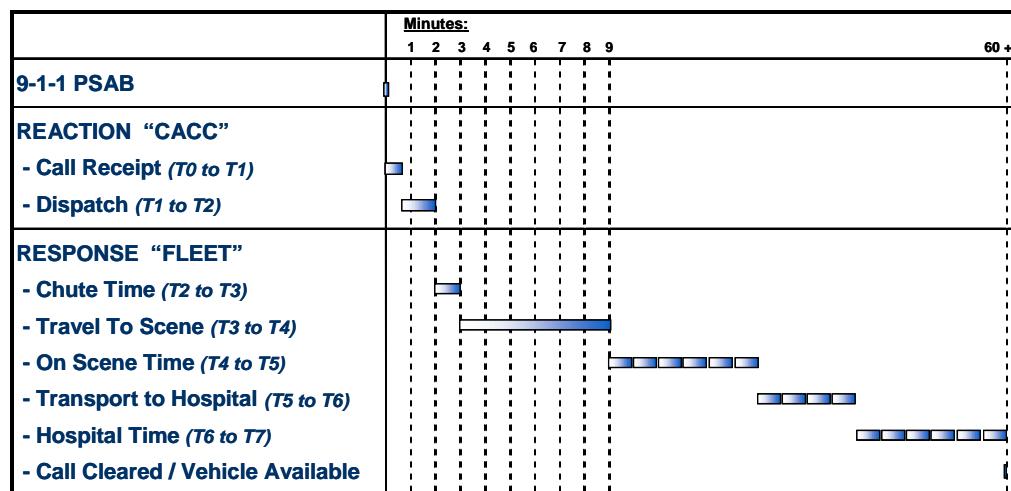
	<u>Avg. Call Duration</u>		<u>Avg. Time On Hold</u>	
	Incoming (Sec)	Outgoing (Sec)	(Sec)	% Incoming
Day (12 Hr)	84	48	50	59%
<u>Night (12 Hr)</u>	<u>96</u>	<u>50</u>	<u>40</u>	<u>42%</u>
Total (24 Hr)	87	48	47	55%

The above information is intended to demonstrate the amount of work involved in EMS communications. The data does not include time spent assessing or looking up information, or making deployment decisions.

6.5 REACTION TIME ADHERENCE

The stages of an ambulance call are summarized in Exhibit 6.9 under the following categories: 9-1-1 PSAB, reaction times (controlled by CACC) and response times (associated with the fleet).

EXHIBIT 6.9: STAGES OF AN AMBULANCE CALL



9-1-1 PSAB

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The Public Safety Answering Bureau (PSAB) answers each 9-1-1 call with the following question “Do you require police, fire or ambulance?” Once the caller states the agency required, the call is transferred to the call taker at the appropriate agency. Generally this portion of the call is completed within 10 seconds.

Reaction “CACC”

Call Taking T0 to T1: CACC call taker determines the call location, what the call is about and the priority, and subsequently forwards the call to a dispatcher. The time at which the call taker initiates the process is commonly referred to as T0. T1 is the time when the call is forwarded to the dispatcher. MOHLTC policy governing ambulance states that for emergency (code 4) calls this process should be completed within 45 seconds.

Dispatch T1 to T2: The dispatcher is responsible for selecting the appropriate ambulance resource and dispatching it to the call. The moment the dispatcher advises the paramedics of a call is referred to as T2. MOHLTC policy states that for emergency (code 4) calls the dispatcher should complete this task within 75 seconds.

Response “Fleet”

Chute Time T2 to T3: Once the ambulance dispatcher notifies the paramedics of the emergency call, MOHLTC policy states that the ambulance crew has 2 minutes to respond from the station. Many services endeavour to reduce this time to 60 seconds or less. The time the paramedics “go mobile” to the call is T3 and the time between T2 and T3 is the Chute Time.

Travel to Scene T3 to T4: T4 is the moment the ambulance crew arrives the scene of a call. The time between T3 and T4 is the Travel Time and is dependant on distance to the call, road and traffic conditions.

On Scene, Transport & Clearance T4 to T7: T4 to T5 is the Scene Time during which the paramedics assess and provide emergency intervention. When they depart the scene of the call enroute to the hospital this time is recorded as T5. T6 is their arrival at the hospital and the time between T5 and T6 is referred to as the Transport Time. This time is dependant on road and traffic conditions as well as distance. Once at the hospital the paramedics provide their report to the hospital staff, complete their documentation, and ready the ambulance for the next call. T7 is the time when the paramedics depart the hospital available for the next call.

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Reaction Time

Exhibit 6.10 presents the reaction times recorded for Hamilton CACC. The most current data is that for year 2000. For comparison 1999 data is also provided.

EXHIBIT 6.10: HAMILTON CACC REACTION TIMES						
UTM	1999			2000		
	T0 - T1	T1 - T2	T0 - T2	T0 - T1	T1 - T2	T0 - T2
Brant	1:13	1:45	2:46	1:06	1:29	2:23
Haldimand & Norfolk	1:25	1:32	2:46	1:15	1:27	2:28
Hamilton	1:09	1:38	2:31	1:05	1:56	2:45
Niagara	1:08	1:35	2:29	1:02	1:34	2:22

Note: Values shown are 90th percentiles for code 4 calls expressed in minutes and seconds i.e., 1:25 should be read as 1 minute and 25 seconds. 90th percentile is the value achieved 9 times out of 10.

The reaction times (T0 – T2) for all but one municipal jurisdiction have improved over the period 1999 to 2000 i.e., the 90th percentile values have decreased. The one exception noted is that of Hamilton, where the 90th percentile value increased by 14 seconds (to 2:45).

Currently, the values range from a low of 2:22 for ambulances dispatched to Niagara, to a high of 2:45 for ambulances dispatched to Hamilton. At the low end of the range the value exceeds the Ministry's guideline (of 2 minutes for code 4 calls) by 22 seconds. At the high end the value exceeds the Ministry's guideline by 45 seconds.

Chute Time

For comparison purposes Exhibit 6.11 presents the corresponding chute times for ambulances dispatched to code 4 priority calls within the UTM. The current (year 2000) chute times are all within the 2 minute guideline established by MOHLTC.

EXHIBIT 6.11: REPORTED CHUTE TIMES		
UTM	1999	2000
• Brant	1:52	1:46
• Haldimand & Norfolk	2:44	1:48
• Hamilton	1:57	1:59
• Niagara	2:03	1:52

Values shown are 90th percentiles (T2 – T3) for code 4 calls expressed in minutes and seconds

7. TECHNOLOGICAL SYSTEMS OVERVIEW

Basic issues frequently repeated by Hamilton CACC staff, UTMs, allied agencies and hospitals pertain to the inadequacy of the technological systems, with which CACC staff are expected to fulfill their responsibilities.

In their view the computer aided dispatch system (CAD) is out-of-date, the present radio / telephone communications systems are unreliable and the mapping information is inaccurate.

The absence of a single integrated, computer-based information retrieval and communications system and of an appropriate level of IT support, were cited as key concerns.

Niagara Region stakeholders indicate that poor communications by radio / portable telephone is particularly prevalent in the Niagara area. They have repeatedly expressed their concerns on these issues to MOHLTC, but in their view the problems persist.

Repeatedly, stakeholders cite the current resources to be cumbersome, not user-friendly, inadequate, inaccurate and time consuming. They argue that the absence of state-of-the-art technology impedes the ability of both communicators and paramedics, to complete their respective tasks within pre-established timelines and contributes unduly to the overall state of stress within the communications centre.

Frequent reference is made to the “more sophisticated” technology residing at Toronto CACC and of that CACC’s capability to track their ambulance fleet and identify the closest available ambulance on an electronic grid, using computer-based GIS technology and automatic vehicle locators (AVL), while Hamilton CACC dispatchers (and paramedics operating within the catchment area) must continue to rely upon inaccurate paper-based map books, as their primary tool.

This section of the report provides an overview of the technological systems available to both Hamilton and Toronto CACCs and the extent to which they may influence the efficiency and effectiveness of the call taking and dispatch functions.

7.1 DISPATCH WORKSTATIONS

Exhibit 7.1 shows the general construct of a dispatcher workstation at Hamilton and Toronto CACCs.

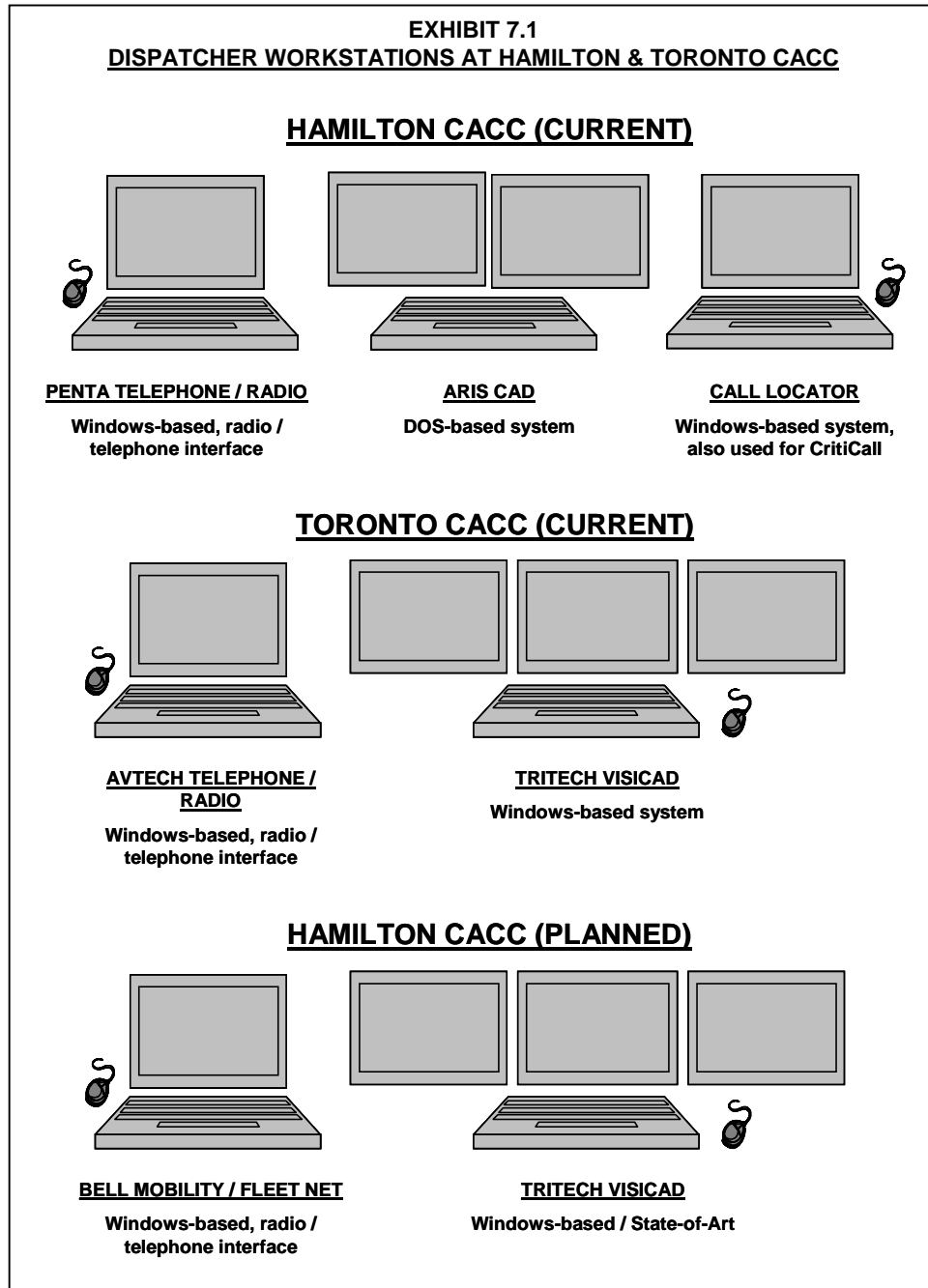
The Hamilton CACC workstation consists of **3 stand alone computer systems**, 4 monitors, three keyboards and two mice, as described below:

- Windows-based computer system for the Penta Telephone / Radio interface;

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- DOS-based computer system for the ARIS CAD; and
- Windows-based call locator computer system, which is also used for CritiCall. The call locator system operates on a separate computer from ARIS i.e., the two are not integrated. Dispatchers must enter the information separately into the individual systems. For example, the address of the call origin needs to be entered once into the ARIS system and a second time into the locator system.



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The Toronto CACC workstation consists of **2 windows-based computer systems**, 4 monitors, two keyboards and two mice:

- Windows-based computer system for the AVTEC telephone / radio system; and
- Windows-based computer system for the Tritech VISICAD system.

MOHLTC is committed to a multi-year implementation program to replace the ARIS CAD technology across the province. The technology of choice is the state-of-the-art Tritech VISICAD. This version of VISICAD is more current than that which Toronto CACC uses. The upgraded system is slated to be introduced into Hamilton CACC by the summer 2003; although the overall provincial schedule is slightly in arrears.

The Province, in partnership with Bell Mobility, is implementing a new Fleet Net radio system under the Government Mobile Communications Project (GMCP)⁶. The Bell Mobility system is slated to be introduced into Hamilton CACC in July 2002. It too may be slightly delayed.

Once the new technology is implemented at Hamilton CACC, dispatcher workstations will not only look very similar to those presently residing at Toronto CACC, but they will also be state-of-the-art and function in an integrated fashion, as does the present Toronto system.

7.2 COMPUTER AIDED DISPATCH (CAD)

Exhibit 7.2 summarizes the key features and functions, provided by the Hamilton and Toronto ambulance CAD systems.

The Ambulance Response Information System (ARIS) used by Hamilton CACC was designed in 1989, to replace an earlier paper-based system known as OASIS (Ontario Ambulance Service Information System). ARIS is a variation of the CAD system used by the Ontario Provincial Police. The system is housed in a mainframe computer at SOLGEN Downsview. CACC consoles are connected to the mainframe. ARIS handles more than a million calls per year.

ARIS CAD is predominately a DOS-based system i.e., it does not support use of a mouse; functions must be carried out by way of a series of keystrokes. ARIS provides for the following functions:

- **Call taking**; entry of pertinent information pertaining to the call;
- **Priority assessment**; medically driven algorithm by which to determine the nature of the emergency and assign a priority to the call. Also, it provides the

⁶ For use province-wide by government ministries and agencies e.g., OPP, SOLGEN, MNR, MTO and MOHLTC.

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dispatcher with information on pre-arrival first-aid. The algorithm used by Hamilton CACC is the MOHLTC Dispatch Priority Card Index (DPCI). If they so choose, dispatchers can also access the information by way of a set of flip cards;

- **Dispatch Routing**; a function by which call taker routes the call to the appropriate dispatcher;
- **Call Tracking**; tracks the status / times of various actions;
- **Communicator Tracking**; tracks the actions of each communicator on the system;
- **Inter-Centre Communications**; permits CACCs to provide or share information on calls and vehicles with other CACCs (also referred to as seamless dispatch);
- **Update Function**; – provides the dispatcher with a continuous status update on all vehicles / calls;
- **Data Collection**; compiles call information data into a database; and
- **Call Statistics**; capability to generate statistical summaries based on the information contained in the database (some using pre-programmed queries);

Toronto's Tritech VISICAD is a windows-based CAD system, developed on a Microsoft NT platform. The technology provides functions similar to those described above; however, there are key differences as described below:

- Toronto CACC uses the Advanced Medical Priority Dispatch System (AMPDS) rather than DPCI to assign its call priorities. Although Tritech VISICAD supports a computer-based version of AMPDS, this is not what Toronto has been using. Theirs is presently a card-based system. Toronto is evolving to computer-based AMPDS. They anticipate that it will be operational by year's end;
- Toronto's current version of Tritech VISICAD does not support inter-centre information sharing (seamless dispatch);
- Call locator / GIS is a component part of Toronto's Tritech VISICAD and is integrated directly into the system. This window automatically pops up when the communicator answers the telephone call. There is no need to enter the data separately (as Hamilton CACC communicators must presently do)⁷;

⁷ Dispatcher may zoom in on a specific location. As they do, more details are displayed. Street names can be turned on and off. Tools are provided for the dispatcher to accurately measure distances. Dispatchers can also access a map layer showing the location of emergency calls which have occurred on that day of the week, at that time of day, over previous periods.

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- Vehicle tracking is carried out by way of an automatic map-based vehicle locator / global positioning system (AVL / GPS), which is integrated directly into the Tritech VISICAD system. The system regularly carries out automatic updates of the location of ambulances in a “real time” mode, thus communicators need not endeavour to estimate a vehicle location and its likely response time to a call, based on the last recorded transaction for that vehicle (as Hamilton CACC communicators must presently do)⁸;
- It is standard procedure for Hamilton and Toronto communicators to initially contact fleet crews by voice radio. Hamilton CACC catchment area stations are equipped with base pagers, which enable communicators to send short voice messages. For the most part however, the communications between Hamilton CACC communicators and fleet is by voice radio. Toronto CACC also relies extensively on voice radio. However, each console is equipped with an automatic alpha-numeric paging system that is an add-on component to the Tritech VISICAD system. It enables the communicator to send call information to the ambulance crew using a mouse “drag and drop feature” i.e., by clicking onto the call icon and dragging it to the ambulance icon(s). This feature can significantly reduce the time spent on radio transmissions, as well as the likelihood of transcription errors⁹; and
- Hamilton’s ARIS has a few pre-programmed statistical queries; however, far fewer than what CACC management requires to monitor the CACC performance or to properly carry out operational planning of deployment coverage¹⁰. Toronto’s Tritech VISICAD, being windows-based, permits relatively simpler design and generation of statistical reports.

Also shown in Exhibit 7.2 are the features and functions, which will be provided by the state-of-the-art Tritech VISICAD, once it is introduced into Hamilton CACC (around the summer 2003). The following are key points to note:

- Both the CAD and telephone / radio system will be windows-based, and the latter will be capable of transmitting digital information;

⁸ GPS satellite receivers installed in the ambulances send a steady stream of location updates to the AVL server via the radio system. The AVL server merges the GPS information with the call status updates and sends the information to the dispatcher's workstations. The AVL Display System presents the dispatcher with an accurate picture of location and status of the ambulance fleet in a geographic context. The AVL system gives the dispatcher a real-time picture of the vehicle deployment, speeding decisions and simplifying the processes involved in deploying and dispatching ambulances.

⁹ Rogers wireless network is the communications interface. The time between transmission and reception will vary, often ranging between 30 and 60 seconds.

¹⁰ Interestingly, similar concerns were raised by UTMs shortly following the transfer of responsibility for ambulance fleets. In response to those concerns, UTMs have been provided a mechanism by which to directly download call data from the ARIS system whenever they wish (except the patient identification). They have also been provided an expanded set of pre-programmed queries, which can be readily accessed through packaged software programs such as Microsoft Access and MapInfo. According to the Ministry's Technical Services Unit, all provincial CACCs will soon be provided with similar tools.

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- According to current Ministry plans, Hamilton CACC will continue to use Dispatch Priority Card Index (DPCI) as the medically driven algorithm for setting call priorities. The algorithm will be computer-based (as it is presently in the ARIS system). Communicators will be provided a set of DPCI cards for use as a backup. Note, the Ministry plans to introduce an enhanced version of DPCI, based on a set of adjustments recently recommended by a Working Group of CACC professionals and Ontario Base Hospital Medical Directors (refer to Section 7.4 of this report). System modifications to accommodate the enhanced DPCI are expected to commence in fall / winter 2002 (i.e., in Phase 3 of the CAD replacement program). Since the CAD upgrade is slated to be introduced into Hamilton CACC in the summer of 2003, it is conceivable that Hamilton CACC will receive the enhanced version of DPCI at the same time;
- The upgraded state-of-the-art CAD will accommodate call routing and information sharing between communication centres (seamless dispatch) as does the present ARIS system;
- The upgraded CAD will include an integrated call locator / GIS subsystem. The function of the subsystem will be to automatically open a mapping window when the communicator answers the telephone call, and map the location of the call based on the information recorded. Hamilton CACC communicators will no longer need to enter the data a second time into a separate system;
- The upgraded CAD system platform will support AVL / GPS as an add-on feature; but it presently is not included in the Ministry's proposed package of upgrades i.e., the current plan does not provide for the installation of GPS satellite receivers in local fleet ambulances or an AVL server to merge the GPS information with the call status updates, or to contract for wireless / satellite data transmissions. Although the communicators will not be able to monitor the vehicle locations in "real time" they will however, be able to track vehicle locations as they presently do, on the basis of the last recorded vehicle transaction; and
- The upgraded CAD system platform will support automatic paging as an add-on feature; but it too is not included in the Ministry's current proposed package of upgrades i.e., the drag & drop feature will be available but the current plan does not provide for the distribution of alpha-numeric pagers to fleet crews or contracting for the wireless communications interface.

7.3 MAPPING CAPABILITY / GIS

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The mapping capability of the call locator and Ministry map books is dependent upon the accuracy of the GIS data.

According to Hamilton CACC communicators the adequacy and accuracy of the GIS data varies throughout the CACC catchment area, from community to community. According to the communicators the GIS data files for some areas are sparsely populated and / or out-of-date.

This contributes to several issues; one predominate issue pertains to the use of the locator, to identify a specific address or cross-street. Without accurate data this becomes a real challenge; particularly so when dealing with long main streets (and for dispatchers who are unfamiliar with the geography of the area).

Another issue cited by Hamilton CACC communicators is that the search name must be very similar to the entry in the database. In their view, the locator is not programmed to search “intelligently” for variations. This is particularly challenging when dealing with short form names and roads having numeric designations, as there may be numerous variations i.e., Regional Road 19, Reg. Rd. 19, Reg. Road 19, etc.

In the staff’s view, these items need to be attended to by the Ministry’s Technical Services Unit (TSU) and GIS section.

Several CACC staff question why MOHLTC has chosen to use in-house resources to maintain the currency of the GIS data. Given the limited available resources and the multitude of expectations of the central TSU and GIS section, it has been suggested that a more appropriate approach would be to contract out this function.

Both Hamilton CACC and the local fleet services have been issued map books prepared by the GIS section. In addition to being described as out of date and inaccurate, they are also described as difficult to read, large and cumbersome to use. Paramedics and communicators are reluctant to use the Ministry issued map books, preferring instead to use commercially available maps. Hamilton EMS prefer to use Rand McNally map books and have asked Hamilton CACC to comply. Niagara EMS prefers to use Map Art maps.

Hamilton CACC staff suggest that allied agencies (fire and police) have better mapping. Communicators routinely call these agencies for assistance, when unable to locate calls using their own tools.

Hamilton CACC communicators have expressed a preference for large-scale wall maps to help them visualize the deployment of their resources. Production of these maps was delayed, due to limited staff resources at TSU. The maps are being prepared and will be available shortly.

IBI Group discussed the mapping issue with Toronto EMS and are advised that they publish their own map book, for use by Toronto paramedics and CACC

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communicators. Toronto CACC management receive few complaints about these books. They attribute this to the following reasons. First, the books are not the primary system for locating calls. They are intended for use as a backup i.e., when the locator / GIS computer system goes down. Second, Toronto's road network is relatively mature. Accordingly, there are significantly fewer requirements for map updates. Third, being a relatively compact municipal jurisdiction (of only 640 square kilometres) the map books have fewer pages and are therefore smaller and less cumbersome to use, than those prepared for relatively larger catchment areas such as Hamilton's.

IBI Group also discussed the mapping issue with the central TSU and are advised of the following:

- TSU predominately relies on municipalities to provide it with the most up to date GIS information. It does not generate its own from scratch. It is for this reason that MOHLTC is establishing data exchange agreements with municipalities throughout Ontario;
- They advise that the Hamilton area GIS data is well populated, and that this may not be the case for Niagara Region or for the smaller rural municipalities within the Hamilton CACC catchment area. They point out that this situation is not unique to the Hamilton CACC catchment area; it is the norm across the province and depends on the investment which municipalities are prepared to make to develop their GIS systems;
- TSU also relies upon CACC staff to advise the Unit of required changes / revisions, when they become aware of the need. TSU acknowledges that this practice has fallen between the cracks, in the Hamilton CACC catchment and elsewhere, primarily because of the shortage in CACC staffing;
- In response to the concerns identified by Hamilton CACC, TSU placed a high priority on updating the ARIS street index file with the most current available information (using a combination of TSU and CACC resources to enter the necessary data including cross street references). The update has been ongoing for approximately 8 months and will be concluded shortly. The revised data files should help to eliminate many of the concerns expressed by CACC staff;
- TSU points out that despite their recent efforts, regular updates of the GIS information will still be required, to ensure currency and accuracy. In this regard the Unit will continue to rely on the CACC staff to either advise the Unit of required changes in a timely fashion, or to enter the changes directly into the system;
- The Ministry's locator subsystem has recently undergone significant enhancement, in preparation for the roll out of the upgraded CAD. The improvements have included enhancement of the internal search capability. TSU points out however, that the problems cited by CACC staff (i.e., those

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pertaining to the internal search capability) may occasionally reoccur, as the issue is directly related to the established protocols for data entry. If CACC staff follow the protocols, then few difficulties are likely to be incurred. It has been suggested that communicator training program be amended to include greater emphasis on the use of the locator subsystem (and the established protocols for data entry);

- TSU acknowledges that the cycle for updating map books can take up to 1 to 1.5 years, and that they have not been able to keep up with the requested changes in a timely manner. In response to CACC staff's opinions that allied agencies update their maps more regularly, TSU appropriately points out that the mapping available to most allied agencies is not GIS based i.e., this is the case in most small communities including Brant, Haldimand and Norfolk. Hence the comparison is that of an apple to an orange;
- TSU acknowledges that contracting out may be a reasonable manner in which to maintain the currency of the GIS data. It will depend on two things: first, the quality of the information which the contracted party is prepared to guarantee and second, the cost to achieve a desired level of quality. To date there have not been significant guarantees and the costs are not inexpensive. For these reasons, TSU is establishing data exchange agreements with municipalities and it would prefer to have CACC staff update the information directly, when they come across required changes; and
- In response to the criticism that the map books are difficult to use, TSU acknowledges that they differ from commercially available products; however, this is by design. To get the most benefit out of the books, communicators and paramedics must not only be trained in their use but they must also be used consistently. Moreover, as a matter of normal process, communicators should consistently provide fleet crews with navigational prompts based on the mapping (i.e., cross street references). It would appear that at present there is neither training in the use of the books nor consistency in their use.

7.4 CALL PRIORITY ASSESSMENT ALGORITHM

Hamilton CACC uses the Dispatch Priority Card Index (DPCI) as its medically driven algorithm for assigning call priorities. The communicator needs but to ask a series of short questions. The questions are organized on a series of cards.

The first card (i.e., primary assessment card) is designed to quickly determine the patient's location, telephone number and condition (i.e., whether unconscious, difficulty breathing or uncontrolled bleeding).

The cards (all but the first) can also be accessed on the computer screen, by way of ARIS.

DPCI also contains basic first aid instructions, which communicators may issue to assist callers until the ambulance arrives scene.

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The system, which has been in use for many years (since early '80s), is concise, simple to use and is considered by many to be a relatively "safe" call assessment tool i.e., the algorithm is skewed to assign priorities on the cautious (safe) side.

The above comments are not intended to suggest that enhancements are not warranted. Over the years, various improvements have been introduced and more are being suggested, as described below:

- Prior to the mid-90's communicators were instructed to ask the primary questions (i.e., the questions contained on card #1) using the exact wording contained on the card – despite the fact that on occasion the response did not clearly describe the patient's true condition (i.e., different interpretation of the term difficulty breathing can lead to the wrong conclusion and the assignment of the wrong priority to the call – most often a higher priority than actually required);
- In the mid '90's Quinte Thousand Islands CACC (based in Kingston) in conjunction with the local Base Hospital tested a variation of the wording of the primary questions and found that the adjustment provided communicators with a clearer understanding of the patient's condition. Kingston communicators continue to use the adjusted wording;
- Also in the mid 90's DPCI was adjusted to include an algorithm for assigning priorities to inter-institutional patient transfers. That algorithm is referred to as II-DPCI; and
- Current Continuous Medical Education (CME) programs include a module referred to as "plain talk DPCI". The objective of the module is to train communicators in the use of alternative wording, which while meeting the intent of the original question, will also provide a clearer description of the patient's condition.

Last year the DPCI algorithm underwent a major overhaul by a Working Group of Ministry personnel, Ontario CACC Managers and Ontario Base Hospital Medical Directors. According to several of the authors, the enhanced algorithm (loosely referred to as DPCI 2) will provide accurate priority assignments to calls (based on the patient's condition); an appropriate level of response, taking into consideration whether the local fleet operates with BLS and / or ALS paramedics; and it includes a medically driven protocol for tiering fire service response. Discussions with MOHLTC indicate that the enhanced DPCI 2 will include a series of built-in queries to facilitate performance monitoring (similar to the AMPDS quality assurance function described below).

Toronto CACC uses Advanced Medical Priority Dispatch System (AMPDS) as its call assessment tool. It too has evolved over the years, and it also is based on a medically driven algorithm. AMPDS is supported by the Tritech VISICAD system; however, this is not the version, which Toronto uses.

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Toronto CACC has adapted the AMPDS system to meet its needs i.e., local conditions. As such they currently use a flip card version of AMPDS (not one which is integrated directly into the computer system). They do intend to move to a computer-based version, possibly by year's end.

IBI Group discussed the two systems (AMPDS and DPCI) with several CACC managers, Base Hospital medical director and stakeholders. From the discussions, it would appear that both systems function as effective tools for assessing call priorities, if they are used consistently and as intended. There appear to be few if any advantages for choosing one system over another.

One area where AMPDS has historically offered an advantage is its built-in Quality Assurance (QA) function, which is used to track how well each individual communicator is performing their duties / adhering to policy. The QA function will advise what cards the communicators regularly use (or not use), how quickly they assess the calls, whether they pre-alert dispatchers when required to do so, whether they provide first aid information, whether they amend the call priority based on additional follow-up information, etc.

Since DPCI has undergone a recent major overhaul and since it too, will include a series of built-in queries to facilitate performance monitoring, there remains but little of the historical advantage offered by AMPDS.

As indicated by one of the Communications Training Officers (CTO) with whom we spoke; in their opinion it comes down to whichever system one is accustomed to using and more importantly that the communicators consistently use the system as intended. In this regard, the Hamilton CACC CTO indicates that "blind dispatching" is one of the problems identified most frequently through random audits. Communicators will oftentimes not refer to DPCI (i.e., they will endeavour to work from memory) or forget to record their use of the system.

Currently Hamilton CACC does not have access to either AMPDS or the enhanced DPCI. Modifications, which will enable ARIS and the proposed state-of-the-art Tritech VISICAD to support the enhanced DPCI 2, are presently on hold for reasons of risk-management. In the Ministry's view, it is imperative that they be assured that the upgraded CAD is functional (or alternatively, that the current ARIS system is available as a backup default) before proceeding with further system modifications i.e., such as those to accommodate DPCI 2.

The Ministry expects to be in a position to proceed with system modifications to accommodate the enhanced DPCI 2 in fall / winter 2002. Since the CAD upgrade is slated to be introduced into Hamilton CACC in the summer of 2003, it is conceivable that Hamilton CACC will receive the enhanced version of DPCI at the same time.

In the interim the Ministry is considering a paper-based support tool for selected aspects of the enhanced DPCI.

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7.5 TELEPHONE / RADIO SYSTEM

Hamilton CACC uses a Penta telephone system; Toronto CACC uses an AVTECH telephone system. In many respects the functions of the two systems are similar; each enables communicators to receive and make telephone calls and they each provide computer generated telephone line switching and radio channel selection by way of a computer interface.

Hamilton CACC communicators cite difficulties with their telephone system, specifically poor audio reception. Occasionally, the problem is significant and causes both the callers and communicators difficulty as their communications are interrupted or become unclear.

Hamilton CACC uses a proprietary VHF radio system; the user interface is the Penta system. According to CACC communicators, hospital representatives and other stakeholders the radio system does not perform as it should:

- The radio system should provide for clear voice communications between CACC and paramedics, between paramedics in the field and hospital staff and between EMS and allied agencies, when they are called upon to assist. Instead there are frequent complaints of poor audio reception;
- The radio system should offer broad area coverage, regardless of the geography, natural features and intensity of local urban development. According to stakeholders numerous dead zones are encountered and there are frequent incidents of radio tower failure;
- Poor communications by radio / portable telephone is particularly prevalent in the Niagara area, where the concerns go back many years. Niagara stakeholders have repeatedly sent the Ministry letters expressing these concerns. According to them, to no avail. At one point the issue became a matter of some alarm, as the Niagara Region Base Hospital Medical Director investigated his potential exposure / liability. In his view paramedics operate under his licence to practice, and in this regard reliable communications with paramedics in the field by radio and telephone, are absolutely essential – particularly as they pertain to designated medical acts; and
- The radio system should be both digital and “trunked” i.e., capable to automatically search the spectrum of available frequencies. The current radio system is neither digital nor trunked.

IBI Group reviewed these concerns with TSU and are advised:

- Ministry continues to investigate and address the concerns as they arise;
- Vendors and technicians have been called upon to help resolve the audio reception problem; as yet it is still unclear as to whether the difficulty is related

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to the Penta telephone, to the head sets, or to other aspects of the telephone system outside the control of CACC (i.e., phone lines);

- In Niagara, communications difficulties are attributed to several factors: geography and local features, lack of sufficient transmission towers and because of their proximity to the U.S. border, restrictions on licenses and power levels. These matters are beyond the control of MOHLTC;
- MOHLTC issued cellular phones to “bridge the gap”. The cellular phones are dual mode (digital / analogue) to increase their effectiveness;
- MOHLTC expects that many of the current radio issues will be resolved by the new Bell Mobility / Fleet Net radio system, which the province is implementing under the GMCP. The proposed radio system will be a trunked digital communications system. The Bell Mobility system is slated to be introduced into Hamilton CACC in July 2002; although the implementation program is running slightly in arrears. In preparation for the new system, the mobile radio equipment in Niagara Regional ambulances has been replaced;
- MOHLTC plans to continue to issue and use cell phones as an adjunct to the new radio system; and
- MOHLTC recently assigned a CACC Technical Coordinator (CTC) to Hamilton CACC. The incumbent filling this newly created position is responsible to strategically support the CACC’s technological systems (i.e., computers, CAD and radio / telephone systems). They will be expected to help address / resolve the radio / telephone communications issues identified above.

In late September, Niagara Region cancelled a contract with Bell Mobility valued at \$27 million, when its proposed radio system failed an interim acceptance test, which was to determine the capabilities of the new radio system to meet the area coverage and building penetration standards set by the Region on behalf of the police, works and local fire services. Since the GMCP is based on similar Bell Mobility infrastructure, this action by Niagara Region raised some concerns among stakeholders.

IBI Group reviewed this issue with the central TSU and are advised that Niagara’s proposed system differed significantly from that proposed under GMCP.

Specifically GMCP relies heavily on mobile repeaters (in vehicles) to attain a desired level of coverage. Niagara’s approach placed greater reliance on portable radios in conjunction with secondary tower sites.

Ministries participating in GMCP are carrying out rigorous system validation tests. The tests are designed to confirm the expected system performance and to identify where problem areas exist. If difficulties are identified in areas where coverage is important then system adjustments are identified. IBI group is also

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advised that the government will welcome the participation of local user groups, during testing and validation.

Toronto CACC operates with a trunked digital 800 MHz radio system, and with a simplex / duplex VHF backup. The radio interface is integrated with the AVTEC telephone system. Toronto CACC also operates with the Provincial Common radio channel for out of town ambulances. The system is owned by Toronto EMS; it is not shared with other municipal services.

The system provides good coverage from a mobile radio perspective, but not for portables, as the system does not use mobile repeaters. In lieu of portables, Toronto EMS paramedics are issued cell phones.

Toronto police and fire services have developed a new 800 MHz radio system, which the two departments share. Toronto EMS is considering sharing a portion of that system and in this regard has requested funding from MOHLTC. They have also requested Ministry funding to replace their own radio system as a longer term endeavour.

7.6 CRITICAL

CritiCall, Ontario's emergency patient referral program, is administrated by the Hamilton Health Sciences Centre. Operating since 1996, CritiCall is intended to help hospitals manage Emergency Department patient volumes and reduce the frequency of Critical Bypass and Redirect consideration.

Last year CritiCall introduced a pilot "patient priority" initiative, which required that personnel within the CACC enter the following specific information into the CritiCall system: CTAS level, hospital destination, ambulance unit number and occasionally a narrative on the patient condition. In Hamilton CACC that pilot was suspended due to the staffing shortage. In October this year, the system was reintroduced at Hamilton CACC as part of a broader Ministry initiative.

Hospital emergency department personnel can access the system as necessary, to ascertain information on anticipated patient inflows by ambulance, and the severity of the condition of those patients.

Given the fact that the CritiCall patient priority system is not integrated with ARIS and that staffing deficiencies exist at most CACCs, including Hamilton, MOHLTC has retained the services of temporary clerical staff, to help carry out the following procedure intended to fulfil the CritiCall requirements:

- Once the ambulance crew departs the scene on route to the hospital, the dispatcher is required to insert the information noted above, into the system;
- Using the "print screen" key, the dispatcher prints the data;

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- CritiCall clerk takes the paper output from the printer and enters the data into the CritiCall system.

IBI Group reviewed this arrangement with several staff of Hamilton CACC and other CACCs. All agreed that this arrangement is not an efficient use of resources. Moreover, given the present deficiency in staffing, it adds to the stress of the communicator's job.

CritiCall system is an existing interface in Toronto and will be included as an interface in the planned VISICAD upgrade. This will eliminate the need to print out the data and have a clerk re-enter it into a separate system. However, dispatchers will still have to enter the information separately into specifically designated fields.

Given that Hamilton CACC coordinates but a small proportion of the patients visiting hospital emergency departments and given that there are considerably more patients who walk in or are transported to emergency departments by private vehicles, there is an overriding question, namely: how well is the information being assembled by CACC serving the CritiCall program objective. In this regard, it is recommended that MOHLTC revisit this question with CritiCall program administrators.

7.7 BACKUP, ROAD MONITORING & SECURITY

Backup Systems

Hamilton CACC has back up telephones and radios located at 3 different locations; Hamilton Police, Niagara Regional Police (St. Catharines) and the hospital in Hagersville. The telephone systems are part of the associated agencies. The radios and paper forms are located in storage containers that can be accessed should there be an emergency. MOHLTC also has communications vehicles located throughout the province, which can be used in the event of an evacuation of the CACC premises.

Toronto CACC's backup centre is their communications bus. Within the bus the radios and telephones are connected, active and ready to be used. Funds for the construction of an additional backup centre at the Toronto Police Communications Centre on Don Mills Road, have been approved by the MOHLTC.

Both Hamilton and Toronto CACCs have contingent equipment i.e., generators, uninterrupted power supplies, back up telephones and portable radios. In the event of a computer failure both CACCs would revert to a paper-based call report.

Hamilton CACC backup plans are not tested regularly. Toronto CACC has used their communications bus on numerous occasions and routinely tests the equipment and emergency plans.

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Road Monitoring

Toronto CACC has a direct link to the closed circuit television camera system, which monitors traffic on major roads and highways in the local area. The CACC can cycle through the various cameras or call up a particular location. This is of some benefit, if dispatchers are seeking information on particular road-based incidents or highway conditions.

The provincial COMPASS system monitors key stretches along the Queen Elizabeth Way, within the Hamilton CACC coverage area. Hamilton CACC does not have a direct feed to this information; nor has a direct feed been requested. If the data gathered by COMPASS is required on occasion, it may be accessed by way of the internet.

Security

Security at both the Hamilton and Toronto CACCs consists of locked entrances, which are monitored by closed caption TV monitors; the use of identification cards and the presence of a receptionist during weekday days.

Hamilton CACC staff have expressed some concerns pertaining to the fact that the centre is located on the grounds of the Hamilton Psychiatric Hospital, as there have been a few instances of patients knocking at doors or windows at late hours.

Other than staff occasionally not ensuring that the doors are locked (or propping them open with a pop can, etc) security does not appear to be a major concern.

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8. ASSESSMENT FINDINGS

Most of the Hamilton CACC organizational structure (shown previously in Exhibit 6.1) has been in place for many years. It was designed and implemented to serve the requirements of MOHLTC when the Ministry managed and administrated all elements of the provincial land ambulance service delivery system. In this regard, the structure has served the Ministry well.

However, with the transfer of the responsibility for the fleet operations to UTMs, the new requirements for inter-governmental management, which are emerging and the rapid rise in ambulance call volumes, which in the Hamilton CACC catchment area is approximately 9% annually, the CACC's present organizational structure is no longer conducive to effective or efficient dispatch operations. The operational shortcomings are described below.

8.1 SERIOUS SHORTAGE IN PERSONNEL AT ALL LEVELS

EXHIBIT 8.1: CURRENT STAFFING "AT-A-GLANCE"				
Position	Approved Full Time	Current Full Time		
		Filled	Acting	Vacant
CACC Manager	1	-	1	-
Operations Managers	3	1	2	-
Shift Supervisors	7	3	1	3
Communicators (dispatchers)	30	22	-	8
Administrative	2	-	1	1
Total	43	26	5	12

Of the 43 approved FTE, only 26 are presently filled by classified full-time staff. There are 17 positions, which are either vacant or being filled temporarily by individuals operating in an "acting" capacity. These include:

- CACC Manager position: This function is being performed by an Operations Manager functioning in an acting capacity;
- 2 of the 3 Operations Manager positions: Shift Supervisors are temporarily filling these positions; and
- 4 of the 7 Shift Supervisor positions: A communicator is temporarily filling one position. The other 3 are vacant;
- 8 of the 30 approved Communicator positions: All 8 positions are vacant; and
- Both administrative positions.

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The vacancies at the communicators' level are particularly problematic. While the above table shows an approved complement of 30 FTE, Hamilton CACC actually requires additional bodies i.e., to backfill when dispatchers are on vacation, away ill, on leave, on training, etc. To accommodate this requirement, the Ministry includes an additional 26% operating allowance in the CACC's annual operating budget. The operating allowance is to be used to address the backfill requirements using either full-time or part-time employees.

In this regard, Hamilton CACC has been able to secure some support namely: 14 contract staff, 12 who work on a part-time basis; and approximately 4 to 8 trainees. These are recent recruits undergoing various phases of their intake training program.

Even with the support of these individuals, Hamilton CACC falls short of the approved complement of 30 FTE. In summary, there is a serious shortage in personnel and as will be shown later, the severity of the problem extends to the point that Hamilton CACC is routinely unable to meet its minimum communicator coverage requirements.

It will also be demonstrated that even at a full communicator complement of 30 FTE, Hamilton CACC would not be able to accommodate the required coverage requirements. The problem stems from what the Ministry expects of each communicator, in terms of workload. In this regard, this document contains recommendations pertaining to an increase in the staffing complement.

8.2 CACC IS UNABLE TO SUSTAIN MINIMUM COVERAGE

Hamilton CACC's approved operating budget provides for approximately 62,000 hours of communicator coverage, annually. As shown by Exhibit 8.2, this equates to approximately 5,200 hours of coverage, monthly.

<u>EXHIBIT 8.2: SHORTFALL IN COVERAGE</u>	
• Monthly Target:	5,200 hrs
• Backfill Requirement:	1,390 hrs
- Sickness & lieu (770 hrs)	
- Vacation & other (620 hrs)	
• Replacement:	1,005 hrs
- Overtime (495 hrs)	
- Contract Staff (510 hrs)	
• Monthly Shortfall:	385 hrs

According to data maintained by CACC management, the backfill requirement, to cover off for communicators on vacation, ill, training, etc, amounts to 1,390 hours

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monthly. The CACC is scarcely able to cover off 1,005 hours monthly (73% of the backfill requirement). This is achieved by using a mix of:

- Contract staff, most working part time;
- Classified full-time staff pressed to work overtime shifts; some staff often working several days of overtime in a row. This is of concern to CACC management, who are wary of the potential stress and other health related impacts; and
- CACC management occasionally filling in as dispatchers to maintain the minimum level of coverage.

Despite these efforts, each month the CACC is shortstaffed by approximately 385 hours. The most difficult shifts to fill are evenings and weekends. CACC is routinely unable to meet the minimum communicator coverage on these shifts.

8.3 ABSENCE OF EXPERIENCE AT COMMUNICATOR LEVEL DUE TO HIGH STAFF TURNOVER

There appears to be ample experience at the management and supervisory levels, if one takes into account all of the available personnel including those who are temporarily assigned to these positions. Consider:

- Incumbent filling the CACC Manager position has approximately 8 years CACC operational experience;
- Of the incumbents filling Operations Manager positions, each has between 15 and 20 years CACC operational experience;
- Of the incumbents filling Shift Supervisor positions, each has between 8 and 15 years CACC operational experience.

On the other hand, a relatively large proportion of the communicators (dispatchers) have relatively little experience. According to a January 2001 memorandum prepared by Hamilton CACC management, approximately:

- 67% of the communicators (classified full-time at the C02 level) have less than 3 years experience; and
- 29% of the communicators, on contract, have less than 3 years experience.

Much of this problem is attributed to the relatively rapid rate at which the staff turnover. As shown by Exhibit 8.3, Hamilton CACC hired and trained 31 communicators over the past 2.5 years; during this same period 23 communicators left the CACC (many to work for other emergency services organizations).

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EXHIBIT 8.3: COMMUNICATOR TURNOVER

<u>Year</u>	<u>Hired</u>	<u>Departures</u>
1999	10	8 (2 trainees, 2 unclassified, 4 classified)
2000	13	8 (1 trainee, 5 unclassified, 2 classified)
<u>2001 (year to date)</u>	<u>8</u>	<u>7 (2 trainees, 1 unclassified, 4 classified)</u>
Total	31	23 (5 trainees, 8 unclassified, 10 classified)

The situation is not unique to Hamilton CACC. Other MOHLTC operated CACCs are having similar difficulties. Georgian CACC in Barrie has lost 20 communicators over the past 2 years and London CACC has lost 17 communicators over the past 1.5 years.

Much of the turnover at Ministry operated CACCs is attributed to the relatively high workload, stress and disproportionately low wage rate.

8.4 RAPID TURNOVER IN STAFF IS ATTRIBUTED TO HIGH WORKLOAD, STRESS & RELATIVELY LOW WAGES

Workload

Hamilton CACC was benchmarked against 10 other emergency dispatch systems (Exhibit 8.4). These included 2 other CACCs operated by MOHLTC in London and Barrie; 2 transfer payment CACCs in Toronto and Kingston; ambulance dispatch centre in Calgary; joint ambulance and fire dispatch centre in Edmonton; 3 fire dispatch centres in Hamilton, Niagara Falls and St. Catharines; and Niagara Regional police services dispatch centre.

Of the dispatch systems surveyed, Hamilton CACC has the highest workload per communicator; averaging at approximately 6,400 calls per budgeted FTE per annum. Hamilton CACC has lost 23 communicators over the past 2.5 years.

The situation is similar at the other two Ministry operated CACCs, which we surveyed, in London and Barrie. Their workloads per budgeted FTE are almost as high as Hamilton's; the former being 5,900 calls per annum and the latter being 6,200 calls per annum. They too experience relatively high staff turnovers. London CACC lost 17 communicators over the past 1.5 years. Barrie CACC lost 20 communicators over the past 2 years.

In comparison, the workloads are significantly lower at the other emergency dispatch centres, which we surveyed:

- At the Kingston Quinte Thousand Island CACC (a transfer payment CACC) the workload per budgeted FTE averages approximately 4,800 calls per annum. The centre reports very few communicator departures; 2 staff over the past two years;

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- At Toronto CACC (also a transfer payment CACC), the workload per budgeted FTE averages approximately 4,200 calls per annum¹¹. The centre reports 7 departures over the past two years;
- At emergency services dispatch centres in Edmonton and Calgary the workloads per budgeted FTE are 3,900 and 4,500 calls per annum, respectively. Each of these centres is reported to have lost but 3 communicators over the past two years;
- At the locally based fire dispatch systems, which we surveyed, the workloads per budgeted FTE range from a low of 1,000 calls per annum (St. Catharines Fire) to a high of 2,500 calls per annum (Hamilton Fire). The staff turnover at these centres is reported to be extremely low, ranging from 0 to 3 losses in staff over the past two years; and
- At the locally based Niagara Regional police service dispatch system the workloads per budgeted FTE is 2,500 calls per annum and the staff losses are reported as 8 communicators over the past two years.

The relatively high turnover in CACC communicators suggests that they are unable to accommodate workloads of 6,000+ calls per annum, for other than a short term.

The relatively low turnover at dispatch centres other than Ministry operated CACCs, suggests that consideration should be given to reduce the workload per CACC communicator. Since the workload itself cannot be substantially reduced the alternative would be to increase the communicator staffing complement, to achieve the same effect.

The question however, is what value would represent an appropriate workload per CACC communicator. Herein the challenge is to balance cost and the complexity of the job. While figures of 1,000 to 2,500 calls per annum (as per the average communicator workloads of the police and fire dispatch services surveyed), would significantly reduce the average communicator's workload (and stress), they would also contribute to prohibitively high costs to operate the ambulance dispatch centres.

In the absence of a detailed investigation of communicator workload capability, we can but suggest a range, which merits consideration for purposes of planning and budgeting CACC operations. According to the data contained in Exhibit 8.4,

¹¹ This figure is based on all ambulance calls, which are assigned an incident number. In Toronto, this includes only codes 1 to 4. Postings (i.e., standbys and downstaffing) are tracked, but are not assigned an incident number. The procedure differs from that of other Ontario-based CACCs in that the others assign incident numbers to all calls regardless of code, except for duplicate calls to the same incident. In the case of the other Ontario CACCs shown in the exhibit, the call volume includes all codes i.e., 1 to 4, 5, 6, 7, 8, 9 and 0. The difference in procedures is attributed partly to the fact that Toronto CACC uses a computer aided dispatch technology (Tri-Tech) which differs from the ARIS system used by all other Ontario-based CACCs.

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that range would be in the low-to-mid 4000 calls per annum e.g., an average workload of approximately 4,200.

Stress

The volume of ambulance calls each staff is expected to handle is but one consideration when looking at the workload. As shown throughout this report one also needs to consider the complexity of the call taking and dispatch functions (as described previously in Section 6 of this report) and such factors as, technical resources available, operational policies and training.

As demonstrated by Exhibit 8.5, which compares the functions carried out by fire, police and ambulance dispatchers, the EMS communicator's workload is considerably more complex than that of the other two services.

<u>EXHIBIT 8.5: COMPARISON OF DISPATCH FUNCTIONALITY</u>			
<u>Function</u>	<u>Ambulance</u>	<u>Fire</u>	<u>Police</u>
Emergency Call Taking	X	X	X
Call Priority Assignment	X		
Call Location Determination	X	X	X
Emergency Dispatch	X	X	X
Fire Tiered Response	X		
Geographic Display	X	X	X
E911 Integration	X	X	X
Radio/Telephone Integration	X	X	X
Pre Arrival First Aid	X		
Hospital ER Capability – CC By-Pass	X		
Base Hospital Interface	X		
Allied Service Interface	X	X	X
CACC Interface	X		
Air Ambulance Interface	X		
Emergency Vehicle Resource	X	X	X
Service Provider Interface	X		
Stand-by Management	X		
Seamless Dispatch	X		
Hospital Transfer Booking	X		
Operational Reporting	X	X	X
Management Reporting	X	X	X

Within fire and police systems there are three predominant functions: call taking, dispatching the resources and communications support while crews are on scene.

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EMS communicator's functions not only include the above, but also extend to such tasks as tiering allied agency support, selecting the most appropriate ambulance (BLS or ALS), communications with base hospital, communications with destination hospital, tracking vehicle times (pre-alerts, hospital notifications, vehicle arrivals and departures at hospitals), assisting with first aid by telephone prior to the crews arrival and coordinating non-urgent / routine calls with emergency responses.

In consideration of the above, not only is the workload assigned to Hamilton CACC (and other Ministry operated CACCs) highly disproportionate to the workloads of the other emergency services dispatch systems; the nature of the work is more complex. The relatively high workload combined with the increased complexity contributes to a relatively stressful work environment. The staffing issue is further exacerbated when one considers the disproportionate wage rates.

Wages

Of the dispatch systems surveyed, communicators at Hamilton CACC (and other provincial CACCs) earn considerably less than their peers at other emergency service dispatch organizations.

Hamilton communicators earn a maximum of \$18.66 per hour (approximately \$39,000 annually). In comparison, communicators at other emergency services dispatch centres earn considerably higher wages for relatively lower workloads (and in many cases for workloads which are less taxing).

EXHIBIT 8.6: COMPARISON OF COMMUNICATOR WAGES

<u>Organization</u>	<u>Operator</u>	<u>Calls Per Budg. FTE</u>	<u>Hourly Wage</u>	<u>Annual Equivalent</u>	<u>Turnover (2 yrs)</u>
Hamilton CACC	MOHLTC	6,400	\$18.66	\$39,000	23
Barrie CACC	MOHLTC	6,200	\$18.66	\$39,000	20
London CACC	MOHLTC	5,900	\$18.66	\$39,000	17
Kingston CACC	Hosp'l	4,800	\$18.66	\$39,000	2
Toronto EMS	Mun'l	4,200	\$25.17	\$52,300	7
Calgary EMS	Mun'l	4,500	\$29.00	\$60,300	3
Edmonton Emerg. Services	Mun'l	3,900	\$25.00	\$52,000	3
Hamilton Fire	Mun'l	2,500	\$27.21	\$56,600	3
Niagara Falls Fire	Mun'l	1,100	\$21.50	\$44,700	0
St. Catharines Fire	Mun'l	1,000	\$25.00	\$52,000	0
Niagara Regional Police	Mun'l	2,500	\$22.35	\$46,500	8

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As shown by the above exhibit the wage rates at dispatch systems, other than CACCs, vary from a low of \$21.50 hourly (Niagara Falls Fire) to a high of \$29.00 hourly (Calgary EMS). The median wage rate is approximately \$25.00 per hour.

The above information on wage rates and staff turnover (with many staff leaving for jobs in less taxing emergency services dispatch environments) suggests that CACC communicator wages should be increased to reflect a) the current market, and b) the complexity of the CACC communicator functions relative to their counterparts in other emergency services dispatch systems.

In addition, provision should be made to accommodate future wage increases to maintain competitiveness with the market. For example, we are advised that Toronto CACC dispatchers are seeking wage parity with Toronto Fire dispatchers. If successful, their hourly wage will increase by an additional \$2 to \$3 dollars. No doubt, wage increases are being considered by several of the other emergency services dispatch systems.

Clearly higher wages will contribute to a higher cost to operate Hamilton CACC. However, they will also contribute to the achievement of a more cost-effective and stable operation, of higher performance quality.

Salary concerns also extend to supervisors, Operations Managers and Managers. If the communicators' wage rates are adjusted then their salaries will also need to be re-examined, in order to maintain an appropriate balance among the different levels.

8.5 PRESENT COMMUNICATOR STAFFING FALLS SHORT OF THE CALCULATED (MODEL) REQUIREMENT

Hamilton CACC management provided us with the following information pertaining to the current approved communicator staffing level and operating budget. We reviewed the information and found a number of inconsistencies as described below:

The management indicated that the approved communicator complement is 30 FTE. MOHLTC head office provided us with a slightly different figure of 29 FTE. The Field office based in Hamilton is also using 29 as the official figure.

CACC management indicated that the approved staffing pattern provides for 61,838 hours of communicator coverage annually. IBI Group calculated the FTE equivalent to this figure by assuming that each communicator works a 40 hour week (2,086 hours annually). The result is 29.6 FTE.

Hamilton CACC management advised us that the approved staffing complement is based on Management Board's CACC staffing model; although they themselves did not do the calculations directly.

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MOHLTC head office staff provided us with documentation on the staffing model. That model:

- Assumes that each communicator (FTE) is capable to handle 5,500 calls per year;
- Requires that provision be made for dispatcher replacement (backfill) at a rate of 26%.

The documentation on the model does not define the phrase “calls per year”, but it would appear that the formula is applied to the total annual volume of calls to which CACC communicators assign an “incident” number.

As noted previously Hamilton CACC handles between 185,000 and 190,000 ambulance calls annually. This is the volume of calls to which Hamilton CACC communicators assign “incident” (ARIS) numbers. In addition to these calls there are duplicate calls (which are not assigned individual incident numbers) and a multitude of telephone and radio transmissions. CACC communicators must deal with all of these transactions.

IBI Group calculated the FTE requirement for Hamilton CACC by applying the current CACC staffing model to an annual call volume of 185,000. According to the calculation, Hamilton CACC requires 33.6 FTE to handle the current annual volume of ambulance calls. This is the figure without backfill. The figure inclusive of a provision for backfill, is 42.4 FTE.

Hamilton CACC’s current approved communicator complement of 30 FTE (or 29 FTE if the head office and Field office records are correct) falls short of the calculation.

IBI Group was provided a copy of the draft budget for fiscal 2001 / 02. We confirm that the budget is based on a communicator complement of 30 staff and that the budget includes provision for backfill (at 26%), on the basis of this staff complement.

The inconsistencies noted above are not unique to Hamilton CACC. We also encountered inconsistencies during our benchmarking to CACCs in Barrie, London, Kingston and Toronto:

- Barrie CACC management could identify the approved FTE but not the staffing pattern. MOHLTC head office concurred with the approved FTE provided by Barrie CACC management;
- London CACC management could identify the approved staffing pattern but not the approved FTE. IBI Group calculated the FTE equivalent. The figure matched MOHLTC head office records;

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- In the case of Kingston CACC, the FTE based on the approved (budgeted) staffing pattern is slightly higher than that recorded by MOHLTC head office;
- Toronto CACC identifies the approved communicator complement to be 84 FTE (78 communicator positions and 6 hospital destination coordinators). MOHLTC records agree with this figure. However, it should be noted that both Toronto and MOHLTC are presenting the information inclusive of backfill. This is not the Ministry's practice elsewhere. The approved values at all other CACCs are shown without the provision for backfill.

Exhibit 8.7 summarizes the call volumes and calculated communicator requirements at the five Ontario CACCs. The calculated values were developed by IBI Group using the Ministry's staffing model. Also shown are the approved communicator complements. For Hamilton, Barrie and London the approved FTE values are those confirmed by MOHLTC head office. For Kingston, the FTE value shown is based on the currently approved staffing pattern of 29,405 annual hours. For Toronto, the approved communicator complement of 84 FTE has been discounted by 26% to eliminate the backfill provision.

EXHIBIT 8.7: STAFFING MODEL VS. APPROVED COMMUNICATOR STAFFING			
	<u>Annual Calls</u>	<u>Model Output FTE</u>	<u>Approved (w/o Backfill) FTE</u>
MOHLTC CACC:			
Hamilton	185,000	33.6	29.0
Barrie	84,000	15.3	13.5
London	121,000	22.0	20.4
Transfer Payment CACC:			
Kingston	65,000	11.8	13.5
Toronto	280,000	50.9	66.7
Note: Unlike the volumes shown for the other CACCs, the Toronto CACC call volume includes only codes 1 to 4. If the volume is adjusted to include an allowance for standby's, of 80,000 to 90,000 then the model output (i.e., the required staffing) increases to between 65 and 67 FTE (which is very close to the approved staffing level shown above).			

As shown by Exhibit 8.7, at CACCs operated directly by MOHLTC (Hamilton, Barrie and London), the current approved communicator complement falls short of the calculated requirement using the model. This is not the situation at the transfer payment CACCs (Kingston and Toronto). There, the approved staffing complement exceeds the calculated requirement by a small amount.

IBI Group attribute the difference in part, to the fact that the management of the transfer payment CACCs have significantly more experience in matters pertaining to operational planning and budgeting, than do their management counterparts at CACCs operated directly by MOHLTC. In fact, at present the Managers' positions

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at all three CACCs operated directly by MOHLTC (Hamilton, Barrie and London), are filled temporarily by an Operations Manager functioning in an acting capacity.

8.6 CACC STAFFING MODEL UNDERESTIMATES THE TRUE STAFFING REQUIREMENTS

Management Board's approved CACC staffing model assumes that each FTE is capable to handle 5,500 calls per year. The data presented in Section 8.4 above, suggests that a figure in the low-to-mid 4000 range would be a more appropriate assumption for purposes of planning and budgeting CACC operations.

We reviewed this question with the Managers of the Toronto and Kingston CACCs i.e., the managers with relatively more experience, who are managing the CACCs reporting relatively few staff departures.

The managers concurred with the views we expressed earlier, namely that one needs to take the total workload and the complexity of the work into account, to properly estimate the communicator staffing requirement. Further, they indicated that this is what they endeavour to do in their operational planning and budgeting.

Toronto CACC management cited the following example. Their CACC dispatches 280,000 ambulance calls annually; however the total transactions are in excess of 400,000 (even though they are not all assigned an incident number). They use the latter figure for budgeting and estimating the communicator staffing needs, as it more accurately reflects the true workload i.e., their communicators respond and spend time on all 400,000 calls – not simply the 280,000 which are assigned incident numbers.

Both managers also concur that if the staffing level is to be determined on the basis of call volume, where the volume of calls is defined to include only those assigned an incident number, then a figure in the low-to-mid 4000 range would be a more reasonable basis for the calculation; as opposed to the 5,500 value currently being used, as such a figure would more appropriately reflect the complexity of the job performed by CACC communicators.

Exhibit 8.8 compares the budgeted communicator complement at Hamilton CACC to a calculation of the required staffing, using as the basis for the calculation: a) annual call volume of 185,000 and b) average workload per communicator of 4,200 calls per annum. All FTEs shown have been rounded to the closest whole number.

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EXHIBIT 8.8: HAMILTON CACC COMMUNICATOR REQUIREMENT			
	Current Budgeted	Calculation Based on 4,200 Calls Per FTE	Difference
FTE			
Base	30	44	+14
Backfill at 26%	8	11	+3
Total	38	55	+17
Annual Staffing Hours @ 2,086 hrs/ yr			
Base	62,580	91,784	+29,204
Backfill at 26%	16,688	22,946	+6,258
Total	79,268	114,730	+35,462

The calculated communicator requirement is 44 FTE without backfill and 55 with backfill. In light of the information presented above and the concerns expressed by stakeholders and communicators (earlier in Section 5 of this report) IBI Group is of the opinion that these figures represent a more accurate picture of the present communicator staffing requirement at Hamilton CACC.

Exhibit 8.8 also shows the calculated annual hours requirement, using 2,086 hours per FTE per annum.

Note, the calculations shown above are based on the current volume of calls, which we noted earlier is increasing at approximately 9% per annum. Therefore additional contingencies need to be considered to allow for future increases in workload.

8.7 HAMILTON CACC WOULD BENEFIT FROM A WELL-DEFINED & ACTIVE QUALITY ASSURANCE PROGRAM

Hamilton CACC is under increasingly greater municipal scrutiny, as are most CACCs throughout Ontario, as local UTM's endeavour to monitor the quality of their land ambulance fleet performance and control the costs.

Hamilton CACC however, is not currently organized to accommodate this newly evolving stakeholder expectation. While there are set operational policies, procedures and protocols, there is no well-defined and active Quality Assurance (QA) program by which to:

- Routinely monitor / assess the CACC's operational performance;
- Identify / implement corrective actions when warranted; or
- Follow up on / evaluate the effectiveness of these actions.

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A comprehensive QA program would address most aspects of the CACC operation including the performance of individual CACC communicators; the ongoing performance of computer based technological resources (CAD, radio / telephone systems, etc); appropriateness / effectiveness of dispatch policies, procedures and protocols; and the effectiveness of staff training programs.

Edmonton, Calgary and Toronto EMS dispatch operations have adopted MPDS as their preferred system for setting dispatch priorities. The system has well-defined QA standards and it is set up appropriately to monitor the operational performance in accordance with the standards.

These centres have well-defined and active Quality Assurance programs. There are dedicated positions and protocols to fulfill this function. Approximately 5% of calls are checked on a routine basis.

Quinte Thousand Islands CACC based in Kingston operates with the Ministry's ARIS CAD system. It has implemented a less rigorous, internal QA program where calls are routinely monitored and reviewed with staff.

The absence of accountability for QA at Hamilton CACC does not mean that it is not desired. Quite the contrary; over the years there have been several attempts by CACC management to formally assign responsibilities for QA, staff training programs and tracking of CACC's performance. However, the relatively rapid turnover in staff coupled with significant losses in experienced staff, have impeded the advancement of those efforts.

MOHLTC is acutely aware of the benefits of a well-defined and active QA program and we understand that this is one of the reasons why the Ministry recently introduced the newly created Communications Training Officer (CTO) position province-wide. The Hamilton CACC CTO is assigned to the Field Office based in Hamilton. Their immediate priorities are to develop and implement comprehensive intake and ongoing staff training programs, of which QA is to be an integral component.

8.8 MANAGEMENT PRESENCE NEEDS TO BE STRENGTHENED

Management (CACC Manager and Operations Managers) are typically on site from 07:00 to 22:00 hours. They are not on duty 24/7, although one management staff is always on-call from 22:00 to 07:00 hours.

Management spend most of their on-duty time endeavouring to resolve the increasing volume of enquiries from municipal officials and other stakeholders. They have very little time available to provide direct supervision and operational control of CACC communications activities i.e., to address such matters as the development of effective data and records systems, resource inventories, monitoring of performance and quality assurance.

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These point have not gone unnoticed by communicators. They are of the opinion that:

- An individual with decision-making authority at or above the Operations Manager level needs to be available on-site (rather than on-call), round-the-clock;
- Day shifts require at least two such individuals; one to deal with the needs of municipalities and the other to provide operational control of CACC communications i.e., “the floor”.

These opinions were reviewed with seasoned “experienced” managers of other CACCs, in more stable environments (e.g., Kingston and Toronto CACCs). Those managers confirm that a strong management presence will contribute to a more effective dispatch operations.

8.9 TRAINING, SYSTEMS SUPPORT & PERFORMANCE FUNCTIONS SHOULD BE INTEGRATED WITHIN CACC

As noted by the job descriptions presented earlier, some responsibility for communications training, systems support (CAD, radio / telephone, etc) and performance analysis is distributed among management and supervisory staff. Due to the significant shortage in personnel, current management and supervisory staff are unable to properly fulfill these responsibilities in addition to all of the other demands on their time.

MOHLTC has recognized the problem and has concluded that additional personnel need to be assigned exclusively to some of these functions. In this regard, MOHLTC is introducing two newly created positions:

- Communications Training Officer (CTO) whose immediate priorities will be to develop and implement comprehensive intake and ongoing staff training programs, of which QA is to be an integral component; and
- CACC Technical Coordinator (CTC) who will be responsible to strategically support the local CACC information, CAD and radio / telephone systems i.e., to ensure that staff are maintaining up to date mapping information, to ensure the proper ongoing operation of the systems including their maintenance, etc.

Both of these decisions will improve Hamilton CACC’s capability to deliver a higher quality service. However, there are several shortcomings, which in our view require consideration, as follows:

- At present, no one at Hamilton CACC is responsible for the development of effective data and records systems; to routinely assemble, review and summarize CACC performance data; or to assist with special projects (i.e., CritiCall). In our view, the creation of a data analyst position would be a useful

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addition to the CACC organization. This function will be even more important if other decisions are taken to introduce an active QA program and a performance-based operation;

- The newly created CTO position is to report to the Field Office based in Hamilton. The newly created CTC position will report to the Technical Services Unit in Toronto; in fact they may split their time between Hamilton CACC and others. In our view consideration should be given to integrating both positions within the CACC organization. This will help to ensure that the needs of Hamilton CACC are properly addressed in a timely fashion and to simplify the accountabilities and reporting relationships.

IBI group recognizes that the proposed transfer of the newly created CTC position to CACC from the central Technical Services Unit will impact the latter Unit's ability to accommodate its broad provincial mandate. Any such decision will require that the Ministry also consider alternate means by which to maintain / strengthen the Unit's technical support capability.

8.10 COMMUNICATIONS PROTOCOLS BETWEEN FLEET AND CACC SHOULD BE REVIEWED

Several UTMs (particularly Niagara Region, their land ambulance operator and base hospital) cited the following concerns relating to the quality and timeliness of communications with Hamilton CACC and MOHLTC:

- Bureaucracy hindering / delaying communications;
- Lack of responses to enquiries;
- Use of form-letter responses (to the point that some now view communications through correspondence to be a waste of time);

Hamilton CACC staff cited the following concerns about its communications with several of the stakeholders:

- Too little interaction e.g., CACC staff occasionally not being informed in a timely manner, of upstaffing for major / special events; introduction of new stations or relocation of existing stations, with little consideration to "time trials", which would help CACC staff determine the closest available vehicle;
- Too much interaction. One example cited involved approximately 50 calls in a single 12-hour shift from fleet management and supervisors of one particular UTM;
- Relatively frequent changes in local fleet policy. Several examples were cited of changes issued by a UTM, with instructions that they be implemented immediately. Subsequently difficulties arise (i.e., found to be too vague,

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susceptible to interpretation, or contradictory to other established policies) and they are rescinded / replaced;

- Time consuming and occasionally unnecessary enquiries; and
- Enquiries bordering on interference with what CACC communicators perceive as their responsibilities.

The parties cited examples depicting one-another to be occasionally over demanding, confrontational and / or uncooperative.

Despite the above, the parties concur that the communications protocols between fleet and CACC should be reviewed; the basic objectives being to:

- Re-introduce stability and harmony in the working relationship;
- Define what needs to be communicated, when and how best to communicate with one-another i.e., whether it be one-on-one, as a group, in writing or oral;
- Contribute to the development of simpler, and where possible more uniform deployment policies and procedures;
- Provide appropriate fora in which stakeholders may work together, to jointly address ambulance issues of common concern and challenges which transcend their respective jurisdictions; and
- Ensure the sharing of pertinent information and reports in a timely fashion including timely responses to enquiries.

Both parties expressed willingness to work together to accomplish these objectives.

8.11 PRACTICES UNDERLYING HAMILTON CACC OPERATION WHICH NEED TO BE ADJUSTED

The operational performance of Hamilton CACC is determined to a great extent by a variety of ongoing practices. In IBI Group's opinion, a number of Ministry and CACC personnel have come to accept these practices as the norm; whereas they may be contributing inadvertently to a less-than-desirable operation. Presented below are several examples of these potentially disadvantageous features, which in our view need to be revisited and fundamentally adjusted:

- The CACC staffing model needs to be adjusted as described above, to more accurately reflect the volume of work carried out by CACC communicators and the complexity of the functions, which they perform; and so that a more accurate estimate of the staffing requirement may be established;

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- Ministry CACCs continue to rely on part time and unclassified contract staff to replace the backfill requirements. Other emergency services dispatch systems have concluded that the use of part time staff is too unreliable if the intent is to provide cost-efficient and effective dispatch operation;
- Ministry CACCs tend to rely on secondments (i.e., incumbents temporarily functioning in an acting capacity) to fill vacant management positions. The general view is that this impacts negatively on the stability of the organization; efforts should be taken to fill the positions on a full-time basis;
- As noted previously, UTMs are introducing changes in deployment policies to enhance land ambulance coverage and quality of service within their jurisdictions. These actions are in keeping with their newly inherited land ambulance responsibilities, which they assumed. However, some of the changes have had a less than desirable influence, and have had to be amended (some more than once). In this regard Hamilton CACC communicators suggest that proposed changes should be vetted thoroughly by CACC management (in partnership with UTMs and other stakeholders) taking into account broader operational considerations, training and IT requirements before they are implemented. Managers of both Toronto and Kingston CACCs concur with these suggestions, as it is their practice to proceed in this fashion before introducing changes;
- According to several CACC management, Ministry operated CACCs endeavour to operate with too many policies and procedures (i.e., provincial policy, multiple local policies and multiple variations of tiered response policy). This adds considerably to the complexity of the communicators' functions and to stress levels. One option is to try to standardize the policies to the extent that this is possible, recognizing local variations may be necessary. At Quinte Thousand Islands CACC the policies have been streamlined (including tiered response policy). The current manual does not endeavour to cover every situation. Communicators are encouraged to think for themselves i.e., to make decisions. They are however, provided with guidelines as to the respective accountabilities of CACC (communications) and the municipalities (fleet services). In management's opinion these changes have had a positive influence;
- Absence of a readily available pool of talent. Finding incumbents capable of undergoing the rigorous training process and tests, to qualify as a CACC dispatcher is not an easy task at the best of times, and it is certainly more stressful a challenge, when there are immediate vacancies to be filled. One suggestion would be to initiate an ongoing, routine of recruitment and training, to ensure the availability of a pool of readily available talent. This would not be dissimilar from Toronto EMS' practice. As a general practice, Toronto EMS advertises for recruits twice a year. Thus when the need arises to fill paramedic (or CACC) positions, they already have a listing of potential candidates in hand. Given the Ministry's current staffing situation (or deficiency thereof) a recruitment program would need to include three

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components: advertising on a routine basis, regular recruitment and training; and

- The capacity of the system to accommodate simultaneous training of a greater number of candidates will also need to be examined.



9. RECOMMENDATIONS

The objective of this independent review by IBI Group is to investigate the present operations of Hamilton CACC and recommend changes in accordance with best business practices, which will enhance the dispatch system and its capability to accommodate the land ambulance requirements of the UTM's, which the CACC serves.

The scope of the review does not extend to the issue of governance of dispatch. That issue is being examined separately by the Dispatch Sub-committee of the provincial / municipal Land Ambulance Implementation Steering Committee (LAISC).

This review has identified a host of immediate issues, which need to be addressed irrespective of any governance decisions. The needs and recommendations extend to most aspects of Hamilton CACC operation including:

- Organization and management
- Workload
- Staffing level
- Workstations
- Wage rates
- Quality assurance
- Call priority assessment
- Technological enhancements
- Training
- Communications with stakeholders.

As noted from the above list, the CACC's operation is a system made up of component parts, which are integrally linked to one another. For the entire system to operate effectively and efficiently, each of the component parts must perform well individually.

MOHLTC is encouraged to consider the recommendations coming out of this review as a comprehensive package and not to selectively pursue certain recommendations at the expense of other, relatively more difficult or costly suggestions. Doing so, without consideration of the potential influence on all of the component parts, could potentially exacerbate the CACC's present difficulties.

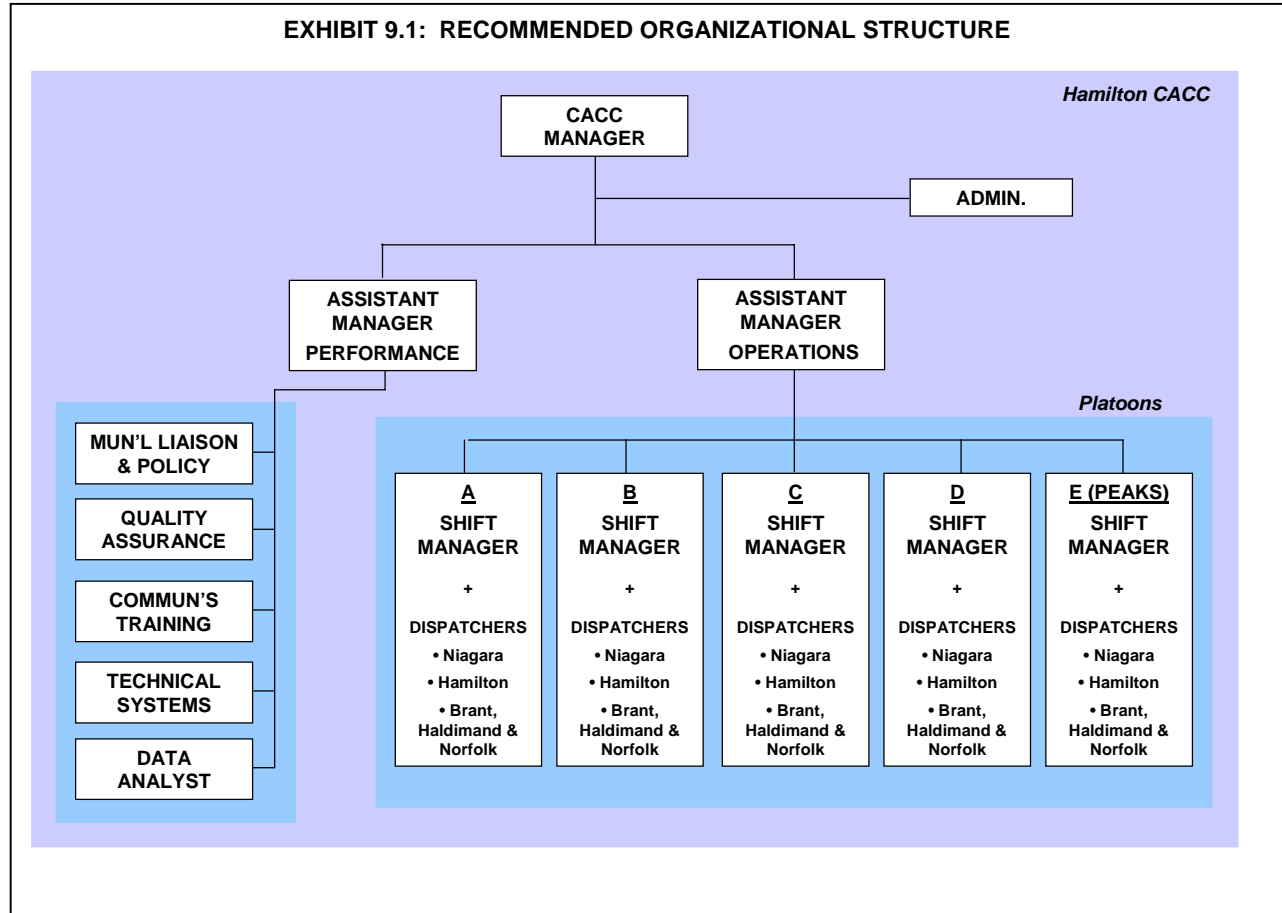
9.1 ORGANIZATION & MANAGEMENT

Presented in Exhibit 9.1 is a recommended organizational structure for Hamilton CACC, to replace that which currently exists.

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EXHIBIT 9.1: RECOMMENDED ORGANIZATIONAL STRUCTURE



Objectives of the Recommended Organization

The proposed changes in the organization are intended to respond (and resolve) the deficiencies identified in Section 8 of this report, the concerns expressed in Section 5, and to provide a proper framework for an efficient, effective and accountable ambulance dispatch operation, including:

- Re-introduce clearly defined lines of accountability for functions, responsibilities and for the performance of staff;
- Introduce a well-defined and active Quality Assurance (QA) program by which to routinely monitor / assess the CACC's overall operational performance as well as the performance of individual communicators, identify / implement corrective actions when warranted and follow up on / evaluate the effectiveness of these actions;
- Ensure that someone with decision-making authority is available on-site round-the-clock;

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- Contribute to a stronger management presence on the communications floor;
- Promote greater teamwork among CACC staff and afford staff the opportunity to gain from one-another's experiences;
- Improve communications between UTM's and CACC;
- Contribute to the development of simpler, and where possible more uniform deployment policies and procedures;
- Provide opportunity for CACC management to vet proposed changes in policy thoroughly in partnership with UTM's and stakeholders, taking into account broader operational considerations, training and IT requirements before they are implemented; and
- Assist UTM's achieve their performance targets as pertain to cost-effective and quality land ambulance operations.

Description of the Proposed Organization

- CACC will continue to be headed up by a CACC Manager. The CACC Manager will maintain accountability for the performance of the dispatch centre.
- CACC will be structured into two sections:
 - "Operations" section, which will deal with the communications floor and the activities of Hamilton CACC communicators; and
 - "Performance" section, which will focus on matters of quality assurance and performance management, municipal liaison and policy, communications training and information systems.
- Each section will be headed by an Assistant CACC Manager. These individuals will be accountable to the CACC Manager for the performance of their respective sections.
- Operations section will consist of 5 platoons (as is the current set-up). Four of the five platoons will rotate routinely to provide round-the-clock coverage. For these platoons, shifts will either commence at 07:00 hours or 19:00 hours. The fifth platoon will provide additional peak period coverage. For members of this platoon, shift starts will be staggered as deemed appropriate by CACC senior management.
- The current practice of 12-hour shifts will be maintained.
- Each platoon will be lead by a Shift Manager. This will be a newly created "management excluded" position blending key responsibilities of the current

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Operations Manager and Shift Supervisor positions. In the proposed organization, both the Operations Manager and Shift Supervisor positions are eliminated (i.e., their functions are replaced with the newly created Shift Manager position). Shift Managers will be accountable to the Assistant Manager Operations, for the performance of their respective platoons.

- Each platoon will be staffed with ample communicators, to provide the necessary coverage on all shifts as described further in Section 9.3.
- Staff will be assigned to the respective platoons for intervals of 8 to 12 months. During this interval the staff (Shift Manager and communicators) will rotate in unison.
- Each platoon to be staffed with experienced communicators who are familiar with the local geography and deployment strategies of one or more of the UTM's served by the CACC (Hamilton; Niagara; Brant; Haldimand and Norfolk).
- Municipal Liaison & Policy Officer will be accountable to the Assistant Manager Performance, for setting / refining operational policy in consultation with CACC personnel, UTM's and other stakeholders.
- Quality Assurance Officer will be accountable to the Assistant Manager Performance, for the design, development and implementation of a comprehensive Quality Assurance program for Hamilton CACC, including ongoing monitoring, analysis, reports and recommendations on improvements.
- Communications Training Officer will be accountable to the Assistant Manager Performance, for the development and delivery of staff training programs.
- CACC Technical Coordinator will be accountable to the Assistant Manager Performance, to strategically support the CACC's technological systems (i.e., computers, CAD and radio / telephone systems) including liaison with TSU, hardware and software suppliers¹².
- Data Analyst will be accountable to the Assistant Manager Performance, for the development of effective data and records systems (in consultation with QA Officer); to routinely assemble, review and summarize CACC performance data; and to assist with special projects.

¹² IBI Group emphasizes that the role of this individual is to provide strategic support intended to preserve the technical integrity of the CACC's technological systems. Functions would include: monitoring systems, testing systems, configuring systems, contingency planning, preventative maintenance, coordinating / delivering training and supporting database updates. Caution should be exercised so that the individual does not get bogged down with clerical or ongoing data entry functions. Those types of functions should be assigned to the Data Analyst and to CACC administrative support staff.

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Assumptions Underlying the Proposed Organizational Structure

- CACC staffing model will be adjusted (as described in Section 8.6) to more accurately reflect the volume of work carried out by CACC communicators and the complexity of the functions which they perform, in order to generate a more accurate estimate of the staffing and budget requirements;
- Required number of personnel will be recruited to fill the staffing requirements;
- Less reliance on part-time staff and on staff functioning in an “acting” capacity; greater propensity to use full-time staff. This will significantly reduce shift vacancies and the associated challenge to find last-minute replacements;
- Wage rates will be adjusted to reflect the current market;
- CACC operating budget will be adjusted to account for the increased staffing and wages;
- Staffing and wage calculations to include provisions for future increases in workload and wage escalation;
- Call volumes and workloads will be monitored closely;
- Communicators to be encouraged to take advantage of the more stable working environment, to gain greater familiarity with one or more geographic jurisdictions, in a timely fashion. All communicators will be encouraged to take ride-outs regularly;
- Training, systems support and performance functions will be integrated within the CACC organization to help to ensure that the needs of Hamilton CACC are properly addressed in a timely fashion and to simplify the accountabilities and reporting relationships;
- Current job descriptions for the CTO and CTC will be carried over, with some minor modifications. New job descriptions will be prepared for the newly created positions within the organization i.e., Shift Manager, Municipal Liaison & Policy position, Quality Assurance position and Data Analyst; and
- Establishment of a readily available pool of talent (i.e., incumbents capable of undergoing the rigorous training process and tests, to qualify as CACC dispatchers) by advertising on a routine basis, regular recruitment and training.

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9.2 WORKLOAD

As shown by Section 8 above, the workload assigned to Hamilton CACC communicators is highly disproportionate to the workloads of other emergency services dispatch systems including those operated by transfer payment CACCs, and fire and police services.

The relatively high workload combined with the increased complexity of the job contributes to a relatively stressful work environment, high staff turnover and operational errors.

Hamilton CACC communicators handle between 185,000 and 190,000 ambulance calls annually. These are the calls, which are assigned incident (ARIS) numbers. In addition to these calls there are numerous other transactions, which CACC communicators carry out. These include duplicate calls (which are not assigned individual incident numbers), and a multitude of telephone and radio transmissions.

Current CACC staffing model assumes that each FTE is capable to handle 5,500 calls per year. This assumption may be appropriate if it is applied to the sum total of all annual transactions (described above). However, this is not the current practice. Rather, the practice is to apply the model solely to a subset of the total transactions, specifically to that portion of the call volume, which are assigned incident numbers. This is the practice because the current CACC technology is not set up to routinely track the total transactions. It is far easier for CACC to simply report the calls handled (i.e., those with incident numbers)¹³.

The following recommendations are intended to mitigate these issues.

- Since it is more convenient to continue with the current practice of calculating the required staffing level on the basis of calls assigned an incident number (rather than to do so on the basis of total transactions, which would require some method for tracking the data) then it is recommended that a value in the low-to-mid 4000 range (i.e., 4,200 calls per FTE) should be used as the basis for the calculation (as opposed to the current value of 5,500); and
- Provision for dispatcher replacement should be maintained at 26%, per the current model to cover off backfill requirements i.e., when dispatchers are on vacation, away ill, on leave, on training, etc.

¹³ Even here there appears to be a variance, with some CACCs reporting all calls with incident numbers and others reporting but a subset of this figure, namely the calls wherein vehicles are dispatched.

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9.3 STAFFING LEVELS

Presented in Exhibit 9.2 is the recommended staff complement, which corresponds to the proposed organizational structure for Hamilton CACC. The exhibit also shows the current approved staff complement.

EXHIBIT 9.2: RECOMMENDED STAFFING COMPLEMENT			
	<u>Action</u>	<u>Current Approved</u>	<u>Recommended</u>
<u>FTE</u>			
CACC Manager	Maintain	1	1
Assistant Managers	New Position	--	2
Operations Managers	Eliminate	3	--
Shift Supervisors	Eliminate	7	--
Shift Managers	New Position	--	5
Communicators	Increase	30	44
Municipal Liaison & Policy Officer	New Position	--	1
Quality Assurance Officer	New Position	--	1
Communications Training Officer	Transfer to CACC from Field Office	--	1
CACC Technical Coordinator	Transfer to CACC from TSU	--	1
Data Analyst	New Position	--	1
<u>Administrative</u>	Maintain	<u>2</u>	<u>2</u>
Total (w/o backfill)		43	59
<u>BACKFILL @ 26%</u>			
Shift Managers	New	--	1
<u>Communicators</u>	Increase	<u>8</u>	<u>11</u>
TOTAL WITH BACKFILL		51	71
TRAINEES @ 10% to 15%	NEW	--	4 to 6

The recommended staffing complement totals to 71 FTE. This figure includes 11 FTE as a provision for communicator backfill and 1 FTE as a provision for backfilling at the Shift Manager level. Note, to ensure the availability of a Shift Manager round the clock, the backfill provision actually calculates to 1.3 FTE. IBI Group recommends that the remaining 0.3 FTE (which is not included in the exhibit) be treated as a developmental position, to be filled occasionally by the most senior communicators, on a rotating basis.

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In view of the relatively high rate of communicator turnover at CACCs including Hamilton CACC, and the occasional need to temporarily deploy communicators from one CACC to another, to maintain coverage requirements in those areas, it is recommended that MOHLTC establish a routine program of recruitment and training, to ensure the ongoing availability of a pool of communicator talent (i.e., incumbents capable of undergoing the rigorous training process and tests, to qualify as CACC dispatchers). In this regard, An ongoing resource pool of 4 to 6 trainees is recommended (i.e., 10% to 15% of the communicator complement).

If the newly created CACC Technical Coordinator (CTC) position is transferred to Hamilton CACC from the central Technical Services Unit (as is recommended) then MOHLTC should also consider alternate means by which to maintain / strengthen the technical support capability of the latter Unit, so that it too may continue to fulfil its broad provincial mandate on behalf of the Ministry and all provincial CACCs, without the presence of this individual. As described previously in this report there are many expectations of the Technical Services Unit ranging from GIS / mapping to new CAD, and radio / telephone systems¹⁴.

Presented in Exhibit 9.3 is the recommended hours of “communicator” coverage to accommodate the proposed organizational structure for Hamilton CACC. The recommended hours of communicator coverage totals to 114,730 hours annually. This figure includes 22,946 hours as a provision for communicator backfill.

EXHIBIT 9.3: RECOMMENDED ANNUAL COMMUNICATOR HOURS		
	<u>Current</u>	<u>Recommended</u>
Base	62,580	91,784
<u>Backfill at 26%</u>	<u>16,688</u>	<u>22,946</u>
TOTAL	79,268	114,730

9.4 WORKSTATIONS

To accommodate the proposed organizational change and increase in staffing, the following additional workstations will be required:

Additional 4 Offices

- 1 for each of the two newly created Assistant CACC Manager positions;
- 1 to be shared among the Shift Managers. Predominately these individuals will be stationed on the communications floor; however occasionally they will require a quiet office in which to do paperwork and telephone calls;

¹⁴ If MOHLTC adopts an approach involving the transfer of other CTCs to CACCs, the staffing situation at the central Technical Services Unit would become particularly problematic, given the Unit's broad provincial mandate. It is recommended that in conjunction with such decisions, MOHLTC should give consideration to the Technical Services Unit's staffing requirements.

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- 1 for each of the newly created positions in the “performance” component of the operation (i.e., Municipal Liaison & Policy, Quality assurance, Communications Training, CACC Technical Coordinator and Data Analyst);
- The above totals to 8 additional offices. However, the elimination of the Operations Manager position will free up 3 existing offices, and the Communications Training Officer already has an office in the building. Taking these into consideration, the net requirement is 4 additional offices.

Additional 9 Communication Consoles (stations)

There are presently 11 consoles; the recommendation is to increase this number to 20 as follows:

- 2 consoles to be assigned to the Shift Managers; during peaks two Shift Managers will be on duty concurrently;
- 6 consoles for call taking; increase of three over the current situation. May wish to consider dedicating one of these consoles to transfers;
- 3 consoles to be assigned to dispatch. Having reviewed the call volume data, it is recommended that the number of dispatch consoles be maintained at the present level of three, and that the current practice of dedicating 1 to Hamilton, 1 to Niagara and 1 to Haldimand, Norfolk and Brant, be maintained;
- 3 consoles for backup dispatch; assigned geographically (as is the current situation). These consoles function primarily during peaks (i.e., weekday day). Given the current staffing shortage, the staff manning these consoles are routinely called upon to perform call taking and dispatch functions concurrently. As described earlier, this is not an ideal situation and occasionally contributes to errors. With the proposed increase in staffing these stations would truly function as dispatch consoles;
- 1 console for transfers, as is the current situation;
- 4 consoles for the proposed pool of trainees; and
- 1 additional communications console, which can be used for a variety of purposes depending on the needs of the CACC i.e., provision for future growth, use during occurrence of a major incident, use as a backup transfer desk and / or in future, as a Hospital Coordinator position¹⁵.

¹⁵ According to Hamilton CACC communicators, hospital emergency diversions are not currently a major issue, such as that being experienced in Toronto. Haldimand, Norfolk and Brant each have but 1 hospital; hence in these municipalities there are no options to consider during emergencies. Although St. Catharines (Niagara Region) has two hospitals and Hamilton has 4 emergency departments, the diversion of ambulances has not been problematic.

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9.5 WAGE RATES

The rapid turnover in communicators at Hamilton CACC is attributed to high workload, stress & relatively low wages. Hamilton CACC communicators (and those of other provincial CACCs) earn considerably less than their peers at other emergency service dispatch organizations.

Hamilton communicators earn a maximum of \$18.66 per hour (approximately \$39,000 annually). In comparison, communicators at other emergency services dispatch centres earn considerably higher wages for relatively lower workloads (and in many cases for workloads which are less taxing). At other centres surveyed, wage rates vary from a low of \$21.50 hourly to a high of \$29.00 hourly.

The recommendations contained in this section are intended to reduce the high staff turnover and attract qualified candidates to the CACC. It is recommended:

- Hourly wage rate for Hamilton CACC communicators be increased to reflect the current market and the complexity of the CACC communicator functions relative to their counterparts in other emergency services dispatch systems;
- Provision be made to accommodate future wage increases to maintain competitiveness with the market;
- Wages of management and other CACC staff should be adjusted to maintain an appropriate balance amongst the different levels.

9.6 QUALITY ASSURANCE

It is recommended that consideration be given to the establishment of a well-defined and active Quality Assurance (QA) program at Hamilton CACC, using as a basis the proposed organizational structure outlined in Section 9.1 of this report. A primary objective of such a program would be to enhance accountability for operations and performance. The QA program should be designed to:

- Routinely monitor the CACC's operational performance, identify / implement corrective actions when warranted, and follow up on / evaluate the effectiveness of these actions;
- Routinely assess the performance of individual CACC communicators in terms of such matters as their ability to adhere to established time standards, their adherence to policies and procedures, appropriate use of the call assessment tool, appropriate documentation of calls, etc;
- Regularly address key aspects of the CACC operation (in addition to the performance of CACC communicators) including the ongoing performance of computer based technological resources (CAD, radio / telephone systems, etc); appropriateness / effectiveness of dispatch policies, procedures and protocols; and the effectiveness of staff training programs; and

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- Assist UTMs to monitor the quality of their land ambulance fleet performance and control their costs.

Base Hospital Medical Directors and personnel strongly emphasize that EMS should be “patient centred”. This view applies to both EMS fleet operations and EMS communications. Given the above, MOHLTC may wish to consider using the Quality Assurance program as a mechanism by which to inject Base Hospital medical direction into CACC operations.

9.7 CALL PRIORITY ASSESSMENT

Hamilton CACC uses the Dispatch Priority Card Index (DPCI) as its medically driven algorithm for assigning call priorities. The system, developed by MOHLTC and in use since the early '80s (and occasionally adjusted), is a concise, simple and relatively safe algorithm.

An alternate, and relatively popular, call priority assignment system is the Advanced Medical Priority Dispatch System (AMPDS). This is the system which Toronto CACC and uses. Note however, Toronto EMS does not use the computer-based version, which is marketed with the Tritech VISICAD system. They use a card-based version, which has been adapted to meet Toronto's local needs (although they will soon evolve to a computer-based system).

Both DPCI and AMPDS perform well; particularly when they are used consistently. As shown in Section 7.4 of this report, there appear to be few if any advantages for choosing one system over another.

One area where AMPDS has historically offered an advantage is its built-in Quality Assurance (QA) function, which is used to track how well each individual communicator is performing their duties / adhering to policy. Since DPCI has recently undergone a major overhaul under the watchful eye of several Ontario Base Hospital medical directors and since the enhanced version of DPCI (loosely referred to as DPCI 2) will include a series of built-in queries to facilitate performance monitoring, there remains but little of the historical advantage offered by AMPDS.

For reasons of risk-management, system modifications to accommodate DPCI 2 are on hold until it can be demonstrated that the proposed CAD upgrade (to VISICAD) is fully functional. The Ministry expects to be in a position to proceed with the system modifications in fall / winter 2002. Since VISICAD is slated to be introduced into Hamilton CACC in the summer of 2003, it is conceivable that Hamilton CACC will receive the enhanced DPCI 2 at the same time.

In IBI Group's view the Ministry's preference to use DPCI 2 is not an issue. What is of issue is the potential for further delays in the Tritech VISICAD and Bell Mobility telephone / radio system implementation programs, since their delay may

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set back the timing of DPCI 2. Accordingly, IBI Group offers the following recommendations:

- As a minimum, MOHLTC should proceed with the development of a paper-based support tool, for use at Hamilton CACC and at other ambulance communications centres, for selected aspects of the enhanced DPCI 2;
- To offset further potential setbacks in timing, MOHLTC should endeavour to secure resources internally or externally (i.e., from Base Hospitals), to help advance the early development of a DPCI 2 training program;
- As an ancillary recommendation to the above, MOHLTC should consider having Base Hospitals commence development of an educational module intended to enhance the communicators' understanding of medical terminology (as this is identified to be a key determinant of dispatch performance);
- Also, to offset further potential setbacks in timing, MOHLTC should endeavour to secure resources internally or externally, to help advance the early development of the QA subsystem to DPCI 2 (i.e., computer-based subroutines by which to track and report on communicator performance); and
- Consider using Hamilton CACC as a pilot site for the development and testing of the QA subsystem framework, using paper-based support tools, assuming of course, that the organizational and staffing issues identified above, are resolved in advance.

9.8 TECHNOLOGICAL ENHANCEMENTS

Stakeholders have repeatedly argued that the absence of state-of-the-art technology impedes the ability of communicators and paramedics, to complete their respective tasks within pre-established timelines.

Frequent reference has been made to the more sophisticated technology residing at Toronto CACC while Hamilton CACC dispatchers must struggle with substandard tools. This contributes to a less-than-desirable dispatch performance, occasional errors in communications and to a stressful working environment at the CACC.

IBI Group reviewed the technological systems available to both Hamilton and Toronto CACCs and the extent to which they influence the efficiency and effectiveness of the call taking and dispatch functions. The review confirms that the DOS-based ARIS CAD, developed in 1989 and currently used by Hamilton CACC, is a key limiting factor to effective dispatch operations. The review also identifies the current analogue Penta telephone / radio system to be a limiting factor. We concur that both these systems need to be replaced.

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The review confirms that MOHLTC and the government are committed to upgrade these systems. The commitments extend to the point that the government has contracted with private sector partners for additional resources and to get the job done not just in the Hamilton area, but across the province (with Bell Mobility for radio system and Tritech for CAD upgrades). The current implementation programs call for the introduction of the new telephone / radio system into Hamilton CACC by July 2002 and the upgraded CAD by summer 2003. Given the government's broad mandate, which extends beyond Hamilton CACC these appear to be the earliest target dates for the Hamilton area.

In our view, once the new Tritech VISICAD and Bell Mobility / Fleet Net radio systems are in place Hamilton CACC will have state-of-the-art systems equivalent to, if not better than those in present use at Toronto EMS.

When the upgraded CAD is initially introduced, it will not include all of the features which presently reside on the Toronto system. Specifically, AVL /GPS and automatic paging will not be included; although the system platform will support these devices as future add-ons. In our view these features are extremely desirable, but not necessarily essential to efficient dispatch operations. The centre will operate well, despite the absence of these devices.

The above is not meant to suggest that MOHLTC is indisposed to the introduction of these features, or to any other feature which will improve CACC performance. As Ministry staff put it, the decisions simply come down to an issue of resources and priorities. Further, they indicate that once the immediate priorities are settled (or at the earliest appropriate time) additional enhancements can be considered.

Another key point, which must be kept in mind, is that computer-based CACC technology is evolving at a relatively rapid pace (as is most forms of computer technology). Today's state-of-the-art is not necessarily the state of the industry tomorrow. Even Toronto, which already possesses a version of Tritech VISICAD, AVL / GPS, a digital telephone / radio system and automatic paging is proposing upgrades to these systems. Therefore, one of the key challenges which MOHLTC faces is to:

- Balance what the CACCs absolutely need to ensure quality performance against what CACC staff and stakeholders may desire; and
- Establish priorities and an appropriate level of investment, in terms of resources and funds.

With the above in mind, we are advised that the Ministry will consider requests for enhancements, but they must be accompanied by an appropriate business case document.

Another concern raised by stakeholders has to do with the current mapping capability, which many describe as inadequate, inaccurate and cumbersome to use. IBI Group discussed the mapping issue with the Ministry's central Technical

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Services Unit and found that Ministry staff have responded to the concerns in a professional and responsible manner:

- Staff log and respond to all concerns which arise;
- Despite the significant demands on TSU staff, for the past 8 months TSU and CACC resources were dedicated to a process, to update the ARIS street index file; and
- TSU staff have recently upgraded the internal search capability of the call locator subsystem.

TSU acknowledges that contracting out may be a reasonable approach by which to maintain the currency of the GIS data; however, it will depend on the quality of the information which the contracted party is prepared to guarantee and the cost to achieve a desired level of quality. To date there have not been significant guarantees and the costs are not inexpensive. For these reasons, TSU is establishing data exchange agreements with municipalities and it would prefer to have CACC communicators (front line staff as it were) update the information directly, when they come across required changes.

Given the comprehensive set of actions taken by MOHLTC to maintain the integrity and improve the performance of the CACC technological systems (all with which, we concur) IBI group can suggest but one additional consideration, namely the following one.

Since most provincial decisions concerning CACC technological enhancements come down to issues of resources and priorities, and since provincial resources are limited, perhaps consideration should be given to introduce a mechanism by which municipal stakeholders responsible for ambulance fleet operations may:

- Increase the profile of specific technological initiatives, which they consider to be of a relatively high local priority; and
- Participate jointly with MOHLTC in their advancement i.e., by enabling the stakeholders to augment the provincial resources (with municipal resources).

As an added benefit, through such a mechanism some provincial resources may be freed up and redirected to other matters of provincial interest.

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9.9 TRAINING

In this area IBI Group offers a number of recommendations. While the focus of this review is on the operation of Hamilton CACC, the recommendations in this area are relatively generic in that they will apply to all provincial CACCs. The recommendations are organized under four headings: intake training, in-service continuing education for communicators, medical understanding / terminology and CACC management educational requirements.

Intake Training

The intake training program for new recruits comprises approximately 1000 hours focusing on such aspects as listening, communicating and multi-tasking. New recruits are given 480 hours of training / mentoring as call takers. Once they demonstrate proficiency at this function, they undergo an additional 520 hours of training / mentoring as dispatchers. At Hamilton CACC a key objective of this portion of the training program is to ensure that recruits are capable to dispatch ambulances from each of 3 dispatch consoles i.e., 1 assigned to cover the Niagara area, 1 to the Hamilton area and 1 to serve Haldimand, Norfolk and Brant.

There is general agreement among stakeholders that the Ministry delivers a quality intake communicator training program. For further evidence of this, one need but look at the number of communicators hired away from the CACC by allied fire and police services.

Traditionally MOHLTC has endeavoured to train all new recruits to perform at both levels: as call takers and dispatchers. Recently an ancillary program to recruit and train “basic call takers” has been established. It is intended to alleviate the immediate, critical shortage of trained CACC communicators, province-wide.

IBI Group discussed the recent initiative with experienced CACC managers and a Base Hospital medical director. The discussions suggest that, from a medical perspective, separation of the call taking and dispatch functions may not be an issue, so long as the responsibilities of each position is clearly laid out and the performance of the individuals is monitored to ensure adherence to prescribed operating protocols and standards.

From an operational perspective, there is a concern, primarily that of reduced operational flexibility. As the number of personnel trained as full-functioning dispatchers is reduced, CACC management’s ability to assign staff to fill vacancies at “dispatch” consoles will also be diminished. Arranging appropriate coverage to attend to multiple casualty incidents could prove to be a problem. Future decision makers may inappropriately misconstrue the minimum training provided to basic call takers as being the acceptable norm.

In view of the above, it is recommended that MOHLTC proceed cautiously with “basic call taker” training, so as to balance the immediate need (which is to

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alleviate critical staff shortage) and the long term requirement, which is to maintain a strong complement of full-functioning communicators, capable to operate as both call takers and dispatchers.

In-Service Continuing Education for Communicators

Ongoing continual education for communicators is presently non-existent, for several reasons. First, there are not enough communicators to permit staff to take the time off to attend such programs. Second, prior to the advent of the Communications Training Officer there was no one at Hamilton CACC who could devote the time necessary to design an appropriate on-going training program (one which would cater to local communicator needs). Third, there are not enough supervisors / operations managers to assist in the delivery of such programs.

The absence of such a program has contributed to several current issues particularly the following two:

- Communicator skill sets have been allowed to lapse over time; and
- Tendency for communicators to occasionally not adhere to operating protocols and standards.

Several examples of such issues include: communicators not endeavouring to gather the cross street information from callers and relying too extensively on the system's mapping capability to provide the information (which it is not always capable of doing); communicators not always referring to DPCI algorithm, occasionally endeavouring to dispatch from memory; and blind dispatching, where communicators do not always verify the location of the call and the crew before proceeding with other tasks.

In this regard, the absence of ongoing training is but one contributor. The absence of an active quality assurance program to monitor / track the performance of individual communicators is another contributing factor. Yet another factor is the relatively few random audits, which were being conducted due to a shortage of staff at the management level. Note, with the recent arrival of the Communicator Training Officer and the return of one Operations Manager (who had been on an extended leave) frequent random audits / staff feedback are now the norm.

The above issues (i.e., occasional lack of adherence to operational policy) are the types of issues identified by the recent random call audits. They are the types of issues identified by the Ministry's Investigation, Certification and Regulatory Compliance Group. They are also the types of issues, which stakeholders have been complaining about for an extended period.

In view of the above, it is recommended that:

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- Hamilton CACC Communications Training Officer (CTO) should continue with their effort to design and implement an in-service ongoing education program intended to maintain / sharpen communicator skill sets and to ensure adherence to operating protocols and standards. This should be carried out in consultation with the Ministry's Educational Services unit and should include regular communicator rideouts with local fleets;
- Training program should be integrated with the Quality Assurance program (recommended in section 9.6 above). In this regard there should be standards and benchmarks to cover such areas as: knowledge, skills, adherence to policy and protocols, effectiveness and efficiency in carrying out prescribed duties, familiarity with geographic areas and deployment strategies, adjustments after mistakes identified and corrections suggested, etc;
- Given the current CACC operating environment, which is described as less than desirable, CTO should consider expanding the scope of the training program to include conflict resolution and stress management; and
- As described below, the training program should be expanded to include a module pertaining to medical understanding / terminology.

Medical Understanding / Terminology

Intake training focuses on such aspects as listening, communicating and multi-tasking. Ongoing continual education for communicators, although presently non-existent, tend to focus on such aspects as maintaining / sharpening skill sets and ensuring adherence to operating protocols and standards.

One area in which both the intake and ongoing training programs appear to be lacking pertains to "medical terminology / understanding". On this point, there is general agreement. It was identified by the communicators, by supervisors, Base hospital medical directors and by the newly assigned Communications Training Officer.

It is recommended that MOHLTC should consider having Base Hospitals commence development of an educational module intended to enhance the communicators' understanding of medical terminology. This should be carried out in consultation with the Ministry's Educational Services unit and with the CACC Communications Training Officer.

CACC Management Educational Requirements

Many CACC management positions are presently filled by incumbents functioning in an acting capacity. During this review, it was noted that many of these staff have not been provided with training to help them carry out the duties, which are expected of them. The following are several areas where CACC management would benefit from additional training / skills enhancement: leadership and team

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building, handling of call complaints, utilizing call data and tracking performance and preparation of capital and operating budgets.

It is recommended that these staff be given the opportunity to partake in programs designed to improve such skills, at the management level.

9.10 COMMUNICATIONS WITH STAKEHOLDERS

It is recommended that Hamilton CACC management undertake a review of existing communications protocols in consultation with MOHLTC Field Office, UTMs and other stakeholders. The objectives of the review will be to:

- Re-introduce stability and harmony in the working relationship;
- Define what needs to be communicated, when and how best to communicate with one-another i.e., whether it be one-on-one, as a group, in writing or oral;
- Contribute to the development of simpler, and where possible more uniform deployment policies and procedures;
- Provide appropriate fora in which stakeholders may work together, to jointly address ambulance issues of common concern and challenges which transcend their respective jurisdictions; and
- Ensure the sharing of pertinent information and reports in a timely fashion including timely responses to enquiries.

APPENDIX A

SCOPE: TASK DESCRIPTIONS

A. SCOPE: TASK DESCRIPTIONS

Presented below are abbreviated descriptions of the seven (7) tasks set out in the study terms-of-reference. The descriptions were developed by IBI Group by loosely paraphrasing from both the Ministry's terms-of-reference (RFP) and the proposal, which IBI Group submitted in response to the RFP.

Task 1: Document Issues, Concerns, Complaints & Suggestions

Identify, examine and document the issues, concerns, complaints and suggestions put forward by municipal officials and Hamilton CACC personnel, as they may pertain to such matters as: organization, management and operation of Hamilton CACC; staffing; mapping; radio / telephone communications; and expectations of CACC by municipal clientele and other stakeholders.

Task 2: Staff Recruitment & Retention

Investigate the factors pertaining to the recruitment and retention of Emergency Medical Dispatchers (EMDs) at Hamilton CACC, and how those factors either contribute to or hinder the efficiency and effectiveness of the call taking and dispatch functions. Subsequently, use the information to formulate practical recommendations, in keeping with best business practices.

Task 3: GIS Technology / Mapping Capability

Investigate the current GIS technology / mapping capability in terms of effectiveness, data accuracy, frequency of updates and operational ease for both the communications officer and the land ambulance paramedic. Document the difficulties and investigate means for interim mitigation, until the proposed new ARIS technology is introduced (circa 2003).

Task 4: Efficacy of Hamilton CACC Staffing

Investigate the extent to which the efficiency and effectiveness of the call taking and dispatch functions at Hamilton CACC may be influenced by such factors as: present location (based in Hamilton), CACC organizational structure, CACC staffing level, shift length and rotation and CACC operational policies.

Task 5: CACC Workload Distribution

Examine the distribution of emergency and non-emergency workloads; report on how non-emergency calls impact the processing of emergency calls; and where applicable, suggest mitigation strategies taking into consideration such factors as workload redistribution, shift schedule adjustments, increases in staffing and potential changes in technology.

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Task 6: Complaints Process

Examine how complaints are documented, tracked and investigated; the roles in the process played by MOHLTC head office and field staff; and how findings and remedial actions are communicated to CACC staff and to complainants. Where applicable, recommend procedural improvements.

Task 7: Comparison of Hamilton CACC to Toronto CACC

Assemble comparative data from Toronto EMS on such factors as: organizational and operational structures; staffing complement; recruitment techniques including pre-employment screening and requisite training; wages; emergency and non-emergency workload distribution; call volumes and reaction times. Compare the efficiency and effectiveness of the call taking and dispatch functions of the two centres in terms of the above factors.

APPENDIX B

STAKEHOLDER CONSULTATIONS

B. STAKEHOLDER CONSULTATIONS

B.1 DEFINITIONS

- **Upper-tier municipalities:** Upper-tier municipalities (UTMs) are responsible to ensure the proper provision of land ambulance fleet operations within their jurisdictions. Their responsibilities include setting the level of coverage, the geographic deployment of resources, maintaining local response time performance, and with the assistance of the Base Hospital, ensuring the quality of the patient care administered by paramedics;
- **MOHLTC:** UTMs rely on MOHLTC for ambulance communications services, more commonly known as dispatch. Also, the Ministry maintains a role in the setting of public policy, functions in a regulatory capacity and is a major funding partner;
- **Hospitals:** Hospitals view the ambulance system as a means of extending patient care services beyond the walls of the institution, via the capabilities of the paramedics. Base Hospitals, along with the UTM and MOHLTC, are responsible for paramedic training and certification, and for quality assurance as it applies to the symptom relief and defibrillation functions carried out by paramedics;
- **Paramedics:** These are the front line caregivers. There are two levels of paramedics: Primary Care Paramedic and Advanced Care Paramedic. The latter undergo significantly more intensive training to enhance their skills and assessment capabilities during critical interventions and as a result, are capable of providing a higher level of care to patients;
- **Fire Departments:** Through a co-ordinated tiered response, fire departments are called upon to provide patients with rapid intervention of first aid, CPR and other basic care if a patient is in dire need and an ambulance is delayed;
- **CACC Dispatchers:** Dispatch is a major entry point into the health services system. Dispatchers (communications officers) are the key personnel entrusted with the responsibility to provide rapid ambulance response / medical intervention to emergency situations; and
- **General Public:** As the primary clientele, the public's sole interest is ensuring that a quality emergency medical service is on hand in the event of an emergency, to respond to their needs in an expedient fashion.

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B.2 LOCAL STAKEHOLDERS WHO WERE CONSULTED

Meetings were held with the following stakeholders. With some, we met several times. In several instances follow-up telephone conversations were held and e-mails were exchanged, to clarify the information discussed at the meetings.

Emergency Health Services – Head Office

- Malcolm Bates, Director EHS
- Mark Hull, Acting Provincial CACC Co-ordinator
- Frank FitzGerald, Senior Manager Technical Services Unit
- Jim Van Pelt, Manager Investigation & Licensing

Emergency Health Services – Hamilton Field Office

- Bryan Clarke, Acting Sr. Field Manager
- Al Duffin, Acting Field Manager (former Manager Hamilton CACC)
- Shawn Wolkowski, Communications Training Officer

Hamilton CACC Management

- Peggy Haraburda, Acting CACC Manager
- Andre Marcotte, Acting Operations Manager
- Lloyd Ryan, Operations Manager

Hamilton CACC Supervisors & Front Line Personnel

- CACC Supervisors: Cindy Falco, Kathy McCarthy, Brian Nelson & Bruce Nevitt
- Dispatchers: Elizabeth Abbott, Lissa Bondio, Colette Cooke, Lisa D'Archi, Kay Franco, Patrick Fry-Smith, Denise Georgian, Ed Hare, Tonia Kinch, Janice McMeeken, Rick Nutter, Bonnie Ternan

Niagara Region Representatives

- John Cunane, Director Public Safety Division
- Frank Adamson, Director Niagara EMS
- Debby Zimmerman, Regional Chair
- Robyn Williams, Niagara Medical Officer of Health
- Doug Munkley, Base Hospital Medical Director
- Sharon Montgomery Greenwood, Operations Manager Niagara EMS

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- Fire Services: Jim Douglas, Fort Erie Fire; Al Jones, St. Catharines Fire; Chris Halliday, Grimsby Fire; Colin Ruddel, Niagara Falls Fire; Lee Smith, Niagara Falls Fire
- Peter Swick, Niagara Paramedic Association

City of Hamilton

- Glen Peace, Director Emergency Services / Fire Chief
- Brent Browett, Acting Manager Hamilton EMS
- Ken Knoflook, Deputy Fire Chief
- Brian Moar, Hamilton Emergency Services - Fire
- Dr. Michelle Welsford, Medical Director, Hamilton Health Sciences Paramedic Base Hospital Program
- Lisa Browett, HHS Base Hospital Program
- Eileen Smith, HHS General Site (ER)
- Jim Hemrica, Coordinator Hamilton Emergency Service Network

County of Brant

- Charles Longeway, Manager Ambulance Service
- Luke Hewitt, Ambulance Service Paramedic
- Helen Mulligan, Ambulance Committee Chair
- Joan Gatward, Councillor

County of Haldimand

- Jack Cruickshank, General Manager Community Services
- Ernie Jones, Manager Ambulance Service

County of Norfolk

- Denys Prevost, Fire Chief / Land Ambulance Director
- Darwin Rouse, EMS Manager
- Barb Pond, Norfolk General Hospital
- Rose Gass, Norfolk General Hospital

Six Nations

- Michael Seth, Operations Supervisor Six Nations Ambulance

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Others

- Ron Kelusky, General Manager, Toronto EMS
- John Lock, Director Toronto CACC
- Wayne Vibert, Manager EMS System Control, Toronto CACC
- Blake Forsyth, Sr. Field Manager Eastern Ontario
- Ted Harris, Manager Kingston CACC (by telephone)
- Sarah Greeniaus, Grand River District Health Council
- Dr. Gord Jones, Chair of the Medical Advisory Committee of the Provincial Hospital Advisory Group (by telephone)

APPENDIX C

COMPARISON OF HAMILTON CACC TO OTHER DISPATCH CENTRES

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COMPARISON OF HAMILTON CACC TO OTHER

DISPATCH CENTRES

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C. COMPARISON OF HAMILTON CACC TO OTHER DISPATCH CENTRES

C.1 INTRODUCTION

The scope of this assignment requires that IBI Group compare the efficiency and effectiveness of the call taking and dispatch functions of the Hamilton CACC to Toronto CACC.

In this regard we are committed to assemble comparative data from Toronto EMS on a variety of factors, as listed below, and to investigate the extent to which the efficiency and effectiveness of the call taking and dispatch functions at Hamilton CACC are influenced by such factors:

- Organizational and operational structures;
- CACC operational policies;
- Staffing complement, call volumes and workload distribution;
- Recruitment techniques including pre-employment screening and requisite training;
- Wage rates; and
- Technical resources.

Two meetings were held with management of Toronto CACC. Comparative data was assembled and reviewed.

A key objective of this assignment is to develop practical recommendations for operational improvements “in accordance with best business practices”. In this regard, it was IBI Group’s opinion that a broader benchmarking of Hamilton CACC would be of added value i.e., benchmarking against other emergency service dispatch systems, in addition to Toronto EMS. This was discussed with the client and they agreed. Accordingly, we carried out a brief telephone survey of the following dispatch centers, in addition to Toronto EMS:

- CACCs based in Barrie and London, which are operated directly by MOHLTC, as is Hamilton;
- Transfer payment CACC based in Kingston (Toronto is another transfer payment CACC);
- EMS dispatch centres outside of Ontario in Edmonton (integrated fire and EMS) and Calgary;

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- Local fire dispatch centres based in Hamilton, Niagara Falls and St. Catharines; and
- Niagara Regional Police Services dispatch centre.

The key comparators are shown in Exhibit C.1. They are discussed briefly in Section C.2 according to the following headings: relative workloads, relative complexity of the EMS function, wage rates, Quality Assurance, recruitment and training, and staff retention. Presented in Sections C.3 to C.12 are highlights of the respective telephone survey discussions.

C.2 SUMMARY

Relative Workloads

A number of factors will influence the communicators' workload. The primary factors are call volume and staffing level (which may be expressed in terms of the number of staff or in staffing hours); but there are also a host of other contributing factors including complexity of the functions being carried out, technical resources available (i.e., integrated computer systems, radio and telephone systems, etc), operational policies and training.

Of the dispatch systems surveyed, the centre with the highest workload is Hamilton CACC. It averages approximately 3 calls per budgeted staffing hour, or 6,400 calls per budgeted FTE per annum.

The situation is similar at the other two CACCs operated directly by MOHLTC, in Barrie and London. They display workloads, which are almost as high as Hamilton's; each one averaging approximately 3 calls per budgeted staffing hour, or 5,900 to 6,200 calls per budgeted FTE per annum.

In comparison, EMS dispatch systems operated by others exhibit significantly lower workloads. Workloads at the two transfer payment CACCs, Toronto and Kingston, average approximately 4,200 to 4,800 calls per budgeted FTE per annum. Edmonton and Calgary average 3,900 and 4,500 calls per budgeted FTE per annum, respectively.

The workloads of the local fire and police service dispatch systems surveyed are also significantly lower. The workload at these centres range from a low of 1,000 calls per approved FTE per annum (St. Catharines Fire) to a high of 2,500 calls per approved FTE per annum (Hamilton Fire and Niagara Regional Police).

Relative Complexity of the EMS Function

As noted above, call volume and staffing level are but two considerations; and that a comprehensive assessment of workload also needs to take into account such factors as the complexity of the functions being carried out, technical resources available, operational policies and training.

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As demonstrated by Exhibit C.2, which compares the functions carried out by fire, police and ambulance dispatchers, the EMS communicator's workload is considerably more complex than that of the other two services.

EXHIBIT C.2: COMPARISON OF DISPATCH FUNCTIONALITY			
<u>Function</u>	<u>Ambulance</u>	<u>Fire</u>	<u>Police</u>
Emergency Call Taking	X	X	X
Dispatch Priority Card Index	X		
Automatic UTM Determination	X		X
Emergency Dispatch	X	X	X
Geographic Display	X	X	X
E911 Integration	X	X	X
Radio/Telephone Integration	X	X	X
Pre Arrival First Aid	X		
Bed Availability – CC By-Pass	X		
Base Hospital Interface	X		
Other Service Interface	X	X	X
CACC Interface	X		
Air Ambulance Interface	X		
Emergency Vehicle Resource	X	X	X
Service Provider Interface	X		
Stand-by Management	X		
Seamless Dispatch	X		
Hospital Transfer Booking	X		
Operational Reporting	X	X	X
Management Reporting	X	X	X

Within fire and police systems there are three predominant functions: call taking, dispatching the resources and communications support while crews are on scene.

EMS communicator's functions not only include the above, but also extend to include such tasks as tiering allied agency support, selecting the most appropriate ambulance (BLS or ALS), communications with base hospital, communications with destination hospital, tracking vehicle times (pre-alerts, hospital notifications, vehicle arrivals and departures at hospitals), assisting with first aid by telephone prior to the crews arrival and coordinating non-urgent / routine calls with emergency responses.

Other points to note are as follows:

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- Of the centres surveyed, Ministry CACCs are the only centres which continue to rely heavily on part time and unclassified contract staff. Most other emergency services dispatch systems have concluded that they cannot rely on part time staff if they wish to provide a cost-efficient and effective dispatch operation;
- Ministry CACCs also tend to rely heavily on filling management positions with incumbents on an “acting” basis. This impacts negatively on the stability of the organization;
- According to several CACC management, Ministry operated CACCs endeavour to operate with too many policies and procedures (i.e., provincial policy, multiple local policies and multiple variations of tiered response policy). This adds considerably to the complexity of the communicators’ functions and to stress levels. At Quinte / Thousand Islands CACC the policies have been streamlined (including tiered response policy). The current manual does not endeavour to cover every situation. Communicators are encouraged to think for themselves i.e., to make decisions. They are however, provided with guidelines as to the respective accountabilities of CACC (communications) and the municipalities (fleet services). In management’s opinion these changes have significantly reduced staff stress (i.e., as demonstrated by the relatively low rate of staff turnover);

In consideration of the above, the workloads exhibited by Hamilton CACC and by other Ministry operated / controlled EMS dispatch systems, are highly disproportionate in comparison to the workloads of the other emergency services dispatch systems (i.e., 5,900 to 6,400 calls per approved FTE per annum for EMS compared to a maximum of 2,500 calls per approved FTE per annum for others). The issue is further exacerbated when one considers the disproportionate wage rates.

Wage Rates

Of the dispatch systems surveyed, communicators at Ministry operated CACCs are paid the lowest wages (i.e., Hamilton, Georgian and London). The same is true of the Kingston CACC (transfer payment CACC). The communicators at these centres earn a maximum of \$18.66 per hour (approximately \$39,000 annually).

In comparison, communicators at other emergency services dispatch centres earn considerably higher wages for relatively lower workloads (and in many cases for workloads which are less taxing).

EXHIBIT C.3: COMPARISON OF COMMUNICATOR WAGES
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<u>Organization</u>	<u>Hourly Wage</u>	<u>Annual Equivalent</u>
Hamilton CACC (MOHLTC)	\$18.66	\$39,000
Barrie, London & Kingston CACCs (MOHLTC)	\$18.66	\$39,000
Toronto EMS	\$25.17	\$52,300
Niagara Falls Fire	\$21.50	\$44,700
St. Catharines Fire	\$25.00	\$52,000
Hamilton Fire	\$27.21	\$56,600
Niagara Regional Police	\$22.35	\$46,500
Edmonton Emergency Services	\$25.00	\$52,000
Calgary EMS	\$29.00	\$60,300

As noted by the above figures, Hamilton CACC communicators earn considerably less than their peers at other emergency service dispatch organizations. Niagara Falls Fire has the lowest workload ratio yet its communicators earn almost \$6,000 more than Hamilton CACC communicators, annually. Toronto EMS communicators earn about \$13,000 more annually; and Calgary EMS communicators earn over \$20,000 more annually.

Discussions with CACC management indicates that the salary concerns also extended to supervisors, Operations Managers and Managers.

Quality Assurance

Edmonton, Calgary and Toronto EMS dispatch operations have adopted MPDS as their preferred system for setting dispatch priorities. The system has well-defined QA standards and it is set up appropriately to monitor the operational performance in accordance with the standards.

These centres have well-defined and active Quality Assurance programs. There are dedicated positions and protocols to fulfill this function. Approximately 5% of calls are checked on a routine basis.

Quinte Thousand Islands CACC has implemented a less rigorous, internal QA program where calls are routinely monitored and reviewed with staff.

All other centres surveyed have no formal QA programs.

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Recruitment & Training

Training lengths and programs vary from centre to centre. Classroom training varies from 2 to 9 weeks. Recruitment policies vary. Most organizations opt for graduates from community college Emergency Communications courses. One EMS centre (Calgary) will hire only experienced paramedics to function as communicators.

Staff Retention

Of the centres surveyed, the highest rates of staff turnover are those at Hamilton CACC and the other CACCs operated by MOHLTC:

- Hamilton CACC has lost 23 communicators over the past 2.5 years;
- Georgian CACC has lost 20 communicators over the past 2 years; and
- London CACC 17 communicators over the past 1.5 years.

In comparison, Toronto EMS and Niagara Regional Police have lost 7 to 8 staff over the past 2 years, many due to retirements. At the other centres the turnover ranges from 0 to 3 losses.

Much of the turnover at Ministry operated CACCs is attributed to the relatively high workload, stress and disproportionately low wage rate.

C.3 GEORGIAN CACC (BARRIE)

Georgian CACC, based in Barrie, is operated directly by MOHLTC. The catchment area covers approximately 5,500 square kilometres and includes two municipal jurisdictions: York Region and the Simcoe County. The catchment area serves a population base of approximately 450,000 persons.

Last year Georgian CACC dispatched approximately 84,000 ambulance calls. CACC management anticipate the annual volume of calls to increase to approximately 100,000 by the end of this year.

The service operates with:

- 1 manager (currently the Operations Manager in an acting position);
- 1 operations manager (currently vacant);
- 4 supervisors; and
- Budgeted 13.5 FTE at the communicators level.

There are 4 platoons, each with approximately three communicators. The approved operating budget provides for additional peak loading, as follows: one communicator 12:00 – 00:00 hours Monday to Sunday (seasonal); one communicator 09:00 – 17:00 hours Monday to Friday; and one communicator

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17:00 – 01:00 hours Monday to Friday. The minimum operating requirement is three communicators after 01:00 hours weekdays and after 00:00 hrs on weekends. Peak staffing on days requires five communicators.

According to CACC management, communicators exhibit a relatively high rate of absenteeism attributed to sickness. Over 75% of the day shifts are downstaffed; nights are downstaffed approximately 10% of the time.

There are four supervisory positions however one of the supervisors is currently on maternity leave and the position has not been backfilled. Currently there is a supervisor on duty 07:00 – 19:00 hours Monday to Sunday. A second supervisor is scheduled 09:00 – 17:00 hours Monday to Friday, to assist with administrative duties. Due to the downstaffing of dispatch positions the supervisors frequently fill in as call takers and dispatchers.

The CACC operates with two dispatchers. The other on-duty communicators function as call takers. At night and whenever the CACC is downstaffed, dispatchers are called upon to function as call takers.

There is very little time to provide ongoing dispatch training. A Communications Training Officer (CTO) has been hired and this individual is focusing on training new staff.

There is no formal Quality Assurance program. Management suggest that when time permits, the CTO should assume this responsibility. Supervisors fulfill a partial Quality Assurance role through complaint reviews.

The biggest hurdle the CACC faces is hiring staff. In the past two years 25-30 part time staff have been hired but few complete the training or once they do, few remain with the service. Three full time staff have left in the past two years.

Staff are of the opinion that the GIS map books are inadequate; the current workload is high relative to the number of available staff; stress levels are relatively high; additional staffing is required; and communicators and supervisors would benefit from ongoing training.

C.4 LONDON CACC

London CACC is operated directly by MOHLTC. The catchment area covers approximately 40,000 square kilometres and includes 7 municipal jurisdictions: Middlesex, Elgin, Oxford, Perth, Huron, Bruce and Grey. The catchment area serves a population base of approximately 750,000 persons. The CACC handles approximately 121,000 calls per year.

The CACC is staffed with:

- 1 manager;
- 2 operations managers (one position is vacant);

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- 5 supervisors (2 positions are filled by staff in an acting capacity and 1 position is vacant); and
- Budgeted 20.5 FTE at the communicators level.

The service operates with 9 part time staff. The approved budget provides for 42,546 hours of coverage annually.

London CACC was assigned a CTO this past winter. However, the individual has spent the majority of their time in Mississauga, assisting with training.

The CACC has 8 consoles. There are four dispatch zones. Each zone monitors the activity of approximately 16 ambulances.

When fully staffed, day shifts include 4 dispatchers and 3 call takers. Staffing drops to 3 dispatchers (no call takers) at night.

The supervisors, Operations Managers and Manager all play a role in QA although there is no formal QA program.

There are 15 staff (full and part time) with more than 10 years experience and 17 staff with less than 2 years experience. In the past 18 months, 17 staff have left the CACC; 22 staff have been hired but only 11 have successfully completed the training program.

In the first 5 months of 2001 the service was downstaffed 500 hours of dispatch time and 1200 hours of supervisory time.

The high turn over in staff is attributed to the relatively low wage rate, insufficient number of staff, relatively high workloads, stress levels, and inadequate training for new dispatchers. Staff at all levels, from communicators to management, express job dissatisfaction and discontentment over wages.

As is the case with Hamilton CACC, London CACC has to deal with a myriad of different fleet policies and procedures set by the 7 municipal jurisdictions within the catchment area; there are numerous (42) fire departments with differing tiered response policies; and the CACC is criticized by municipalities, for not communicating in a timely fashion.

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C.5 QUINTE THOUSAND ISLANDS CACC (KINGSTON)

Quinte Thousand Islands is a transfer payment CACC operated by Hotel Dieu Hospital on behalf of MOHLTC. The catchment area covers approximately 30,000 square kilometres and includes 6 municipal jurisdictions: Frontenac, Leeds Grenville, Lanark, Lennox & Addington, Hastings and Prince Edward. The catchment area serves a population base of approximately 313,000 persons. The CACC handles approximately 65,000 calls per year.

The CACC is staffed with:

- 1 Director;
- 1 Operations Manager;
- 4 Supervisors (supervisors are in the management excluded stream);
- Budgeted 13.5 FTE at the communicators level.

The CACC has been assigned a Communications Training Officer but this person has not arrived as of yet. Also there are preliminary plans to introduce a Technical Coordinator, who will ensure the ongoing proper operations, maintenance and repairs of equipment.

The CACC operates with 3 communicators 24 hours per day and a fourth communicators Monday to Sunday 09:00-17:00 hrs. The communicators work a 42-hour work week (2184 hours per year).

The Operations Manager works Monday to Friday. The Director and Operations Manager rotate to fill the on-call requirements.

The Director is responsible for QA. Supervisors are responsible for monitoring activities and performance. Supervisors do not function as call takers or dispatchers, as such activities would interfere with their supervisory roles. Supervisors and the Operations Manager do an annual performance appraisal for each employee.

The supervisors do regular call reviews. It is anticipated that the CTO may take on this responsibility.

Supervisors rotate on the same schedule as their “team” (platoon). They switch platoons every 6 to 8 months. Each team is “matched” with both experienced and in-experienced staff so that newer staff can learn from the experienced team members.

The dispatchers and supervisors are paid at the same rate as the MOHLTC CACC dispatchers and supervisors. The Operations Manager and Director earn

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similar salaries to their MOHTLC peers; however, they also earn a supplement for being on-call.

Management are of the opinion that salaries should be higher, taking into account the complexity of the dispatch function. In their view communicators should earn a wage comparable to or better than the paramedics.

Quinte Thousand Islands CACC has a relatively high retention rate. It has lost but 2 communicators in two years, and these individuals left for personal reasons i.e., reasons not attributed to the job. In management's opinion, the retention rate is good because the dispatch policies and protocols are clear, and staff are appropriately empowered to carry out their duties. Management also notes that the grievance rate is low: 3 in 13 years, all unsuccessful. This, they attribute to a good working relationship between management and staff.

On recruitment, CACC Management spend considerable time "talking" to candidates, not just interviewing them. The hiring practice emphasizes "problem solving" capabilities and skills.

New recruits are given two weeks classroom training at the CACC; 1 week ARIS training; and 2 to 4 weeks training with an assigned mentor - an experienced dispatcher. New staff will spend 1 to 3 months call taking before moving to dispatch.

A key issue pointed out by CACC management is that Ministry operated CACCs endeavour to operate with too many policies and procedures, some 300 pages worth. This is too much for any communicator to handle.

At Quinte Thousand Islands CACC the manual has been edited to approximately 48 pages. The manual does not endeavour to cover every situation. Communicators are encouraged to think for themselves i.e., to make decisions. They are however, provided with guidelines as to the respective accountabilities of CACC and the municipalities.

Quinte Thousand Islands CACC did encounter difficulty with multiple tiered response policies. It turned to the base hospital for assistance to design a tiered response policy based specifically on the anticipated medical benefit. Fire services' participation in tiered response is now based on this one policy, referred to as the Fire Assist Policy.

The work environment includes an on-site "quiet" room for downtime and breaks. Also, staff are not interrupted during meal breaks, other than in emergencies.

C.6 TORONTO CACC

Toronto is a transfer payment CACC operated by the ambulance division of the amalgamated City of Toronto, on behalf of MOHLTC. The catchment area covers 640 square kilometres and includes 1 municipal jurisdiction i.e., the City. The

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CACC serves a population base of 2.2 million (3 million during weekdays). Annually, the CACC screens more than 400,000 calls and dispatches 280,000.

Toronto CACC operates with 6 platoons. Two platoons operate during day shifts. Each platoon is comprised of: 13 dispatchers, 2 senior dispatchers (union positions) and a supervisor, which is a management position. All but 3 dispatchers are full time employees of the centre.

Dispatchers at Toronto EMS earn \$25.17 / hour; approximately \$0.40 an hour more than primary care paramedics. A senior dispatcher earns \$25.80 / hour and supervisors earn \$59,000 per year (\$28.37 / hour).

Senior dispatchers assist the supervisors with duties such as; sign on crews, provide direction to dispatchers on vehicle deployment, organize optimal crew configuration, field calls for the Critical Care Transport Units, troubleshoot issues, and document incidents. The supervisors report to the EMS System Control (CACC) Manager who reports to the Director of Communications.

Also reporting to the Director of Communications is the Training and Quality Assurance Manager who has 3 Quality Assurance Coordinators working for him. The Quality Assurance Coordinators are management staff equivalent to the Communications Supervisors. The Quality Assurance Coordinators and Manager provide applicant screening, training of both new recruits and current dispatch staff and provide quality assurance through call reviews, monitoring times etc.

Additional support is provided to the Communications Centre through the "Support Services" unit of Toronto EMS. This section provides IT Support, GIS services, a Systems Analyst, Administrative Support Supervisor, Systems Control Operational Support Supervisor and two clerical staff.

Platoons are staffed taking into consideration requirements for vacation, absences, and training.

The centre is always staffed with 4 quadrant dispatch positions, 1 out of town dispatcher, 2 hospital destination coordinators. On nights there may be between 1 and 3 call takers and on day shifts between 3 and 6 call takers. The other positions will assist with call taking as required. The four quadrant dispatchers will be responsible for between 73 and 79 ambulances during peak periods.

Monday to Friday, during the day shifts 3 dispatchers and 1 clerk are assigned to the Non-Emergency Ambulance (NEA) coordination. Toronto EMS dedicates 16 to 22 ambulances for non-emergency transfers on the day shifts.

Toronto EMS uses the Medical Priority Dispatch System (MPDS) call screening process. In their view, it is a more labour intensive process than DPCI, used by Ministry operated CACCs; however, it is considered a more superior tool for screening calls.

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Toronto CACC uses the Trittech VISICAD computer system with an integrated GIS program, integrated AVL/GPS system, integrated Auto Paging, and in vehicle MODAT (Mobile Data Terminal) which provides status data only.

The staff turnover is relatively low. In the past two years the CACC has lost 7 communicators: 3 unsuccessful trainees, 1 who took another position, and 3 retirements.

Communicators receive 5 weeks of classroom training, 2 weeks preceptorship as call takers, 1 week of dispatch training and 6 weeks preceptorship as dispatchers.

Performance appraisals are not the norm. However, there is a formal QA program. Toronto administers the program in accordance with standards suggested by the distributor of AMPDS. By doing so Toronto CACC is accredited by an association of AMPDS users (going under the name of the National Academy of Emergency Medical Dispatch). Targets for call taking and dispatch are 45 seconds and 90 seconds, respectively.

QA Coordinators evaluate 25 calls each day. They examine both individual performance and overall system performance. Time standards are monitored regularly using the Trittech VISICAD system. The Sunnybrook Base Hospital is working with Toronto EMS to establish key indicators for dispatch performance.

C.7 CALGARY EMS

Calgary EMS operates its own communications centre. It serves an area of 550 square kilometres and 860,000 persons. The Communications Centre dispatched over 63,000 calls in 2000. Current projections for 2001 indicate that the call volume has increased by 10-12%.

EMS Chief is responsible for all aspects of the EMS system. Reporting to the EMS Chief is the Deputy Chief of Operations, whose responsibilities include both fleet and communications. Each of these functions is headed by a Superintendent. Reporting to the Superintendent of Communications are 4 platoon supervisors. They have 3 dispatchers on each platoon. Day shifts are supplemented with two additional dispatchers; giving a peak of 5 dispatch staff plus a supervisor on days, and three dispatchers plus a supervisor on nights.

There are 6 dispatch consoles in the centre. The supervisor works one of the consoles. The supervisor will cover off, if a dispatcher is absent.

On nights one communicator is responsible for dispatching and two for call taking. On days one communicator is the primary dispatcher and another functions as the secondary dispatcher / call taker; the other three function as call takers.

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Supervisors are responsible for performance reviews and daily random call audits as required for accreditation by the National Academy of Emergency Medical Dispatch (NAEMD). Supervisors also review dispatch complaints.

There is a 60 second call taking standard and a total of 90 seconds to dispatch a call i.e., if the call taker uses the entire 60 seconds then the dispatcher is left with only 30 seconds. In most cases the call taker will pre-alert the dispatcher, and subsequently follow up with additional data.

One supervisor and an experienced communicator are responsible for training. There are pre-requisites for applicants. They must be paramedics with a minimum of 3 years experience (preferably 5 years at the ALS level). New recruits receive 2 weeks of classroom training and 3 weeks preceptorship by an experienced communicator.

Communicators are paid \$29.00 per hour and supervisors \$31.00 per hour (par with the fleet ALS paramedics).

Calgary EMS dispatch uses Integraph CAD with an AVL / GPS vehicle tracking, integrated GIS mapping and auto dispatch paging.

The telephone system is a Meridian SL1 switch. They are endeavouring to convert to a new digital telephone system, in use by the City; however, the process has encountered difficulty.

The radio is a Motorola 800 Mhz trunked system, which they share with other City emergency services. Communicators speak highly of the system.

In the past two years the communications centre has lost 3 staff through retirement.

The following is an interesting point to note. When a call is tiered to the fire department and the fire truck goes mobile, it switches to the EMS radio channel and the EMS dispatcher is responsible for both the EMS and Fire response. Once the fire truck clears the scene it goes back to Fire Dispatch control.

C.8 EDMONTON FIRE & EMS

Edmonton Emergency Response Services operates its own communications centre. It serves an area of 700 square kilometres and 650,000 persons. The Communications Centre responded to 49,955 EMS calls, 20,074 transfers (70,029 ambulance calls) and 31,657 Fire calls (of which 21,573 are medical assist calls) in 2000. Total calls – 101,686.

The amalgamation of EMS / Fire service and dispatch operations took place in 1996. The dispatchers are members of the Edmonton Fire Fighters Union collective agreement.

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There are four platoons, each with 6 dispatchers and a captain. Two day-transfer dispatchers work overlapping 8 hour shifts from 06:00 to 18:30 hours Monday to Friday. They report to a Day Captain. The 5 captains report to the Emergency Response Communications Centre (ERCC) Manager, who reports to the Integrated Services Manager. The Day Captain assists the ERCC Manager administratively.

Also reporting to the ERCC Manager are: a Mapping Coordinator to keep the GIS up to date; a Methods Analyst to run reports, analyse and manage the CAD; and a Telecommunications Coordinator, to maintain the telephone and radio systems for both the communications room and the Fire/EMS fleet.

Reporting to the Integrated Services Manager is the Chief of Training, and under that individual a Communications Training Captain (CTC). The CTC is responsible for training. His position in the organization is slightly higher than that of the dispatch captains and his pay is proportionately higher as well.

Reporting to the EMS Chief is a Manager of Deployment who studies and monitors EMS call data and formulates deployment strategies. This person works at the same location as the Communications Centre and has close contact with the ERCC Manager and Captains.

Reporting to the Strategic Services Chief is a Manager of Quality Assurance. Reporting to this manager is a full time Quality Assurance Communication Officer who randomly checks calls and tapes. They check 5% of all calls randomly plus calls with identified concerns.

Platoons divide the dispatchers into the following roles.

- 2 Emergency Evaluators (call takers)
- 1 Emergency & Non-Emergency Evaluator (call taker)
- 1 Back up dispatcher (assumes all major incidents) / back up Evaluator
- 1 EMS Dispatcher
- 1 Fire Dispatcher
- 2 (at peak times) Transfer Dispatcher (combination call taker / dispatcher)
- 1 Captain who can assist where required

After 18:30 hrs there is not a transfer dispatcher.

With the exception of the transfer desk, dispatchers rotate through all positions, changing each day. There are firefighters on each platoon who are trained to fill in for vacancies. They primarily do the call taking but are capable of dispatching should it be required.

The dispatchers follow the same platoon rotation as the fire fighters and paramedics. These involve 10 hour day shifts and 14 hour night shifts.

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Transfer dispatchers control a dedicated fleet of transfer vehicles. They work 8 hour shifts (06:00-14:00 hours and 10:30-18:30 hours).

When the fire vehicles are required on a medical call they are dispatched by the EMS dispatcher and are under the EMS dispatcher's control.

ERCC uses a UNIX based Integraph CAD, which is being updated to a Windows NT Integraph system in November 2001. AVL/GPS is being added with the new system. A trunked radio system is used. AMDPS is used for call evaluation.

Training is 3 months long. Seventy (70) percent is classroom-based and 30% is hands on. There is a 1 year probationary period. It is closely monitored by an experience dispatcher, the platoon Captain, the Training Captain and the QA Communications Officer.

All dispatchers receive 24 hours of in-service training (not while working on the desk) each year.

Dispatchers earn \$25.00/hour. A Captain earns \$31.00/hour and the Training Captain makes \$33.00/hour.

In the past five years 3 staff have retired. There is a very low turnover. When hiring they prefer candidates with a Community College dispatch course.

C.9 HAMILTON FIRE

Hamilton Fire operates its own communications centre. It serves an area of approximately 1,358 square kilometres and 625,000 persons. The Communications Centre responds to approximately 25,000 calls per year, half of which are medical responses.

There are two dispatchers per platoon. Platoons rotate through 12-hour shifts 08:00-20:00 hours and 20:00-08:00 hours. On day shifts, 7 days a week, there is a 3rd dispatcher working 08:00-20:00 hours. Total number of dispatchers – 10 full time.

There are 4 firefighters per platoon (16 in total) who are trained as dispatchers and will be assigned to the communications room should a dispatcher be absent.

There are two supervisors who work Monday to Friday 08:00-16:00 hours. Their responsibilities include CAD updates and dispatcher training. Supervisors report to the Deputy Chief directly. There is no formal QA program.

New dispatchers get 9 weeks of classroom, simulation and preceptorship training with weekly testing. Once they commence working as dispatchers there are annual exams they must pass to move up the salary grid. Three dispatchers have retired in the past two years. One of their newer dispatchers is the former Hamilton CACC manager (pre-amalgamation), Paul McDonnell.

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Dispatcher salaries start at \$36,900 and move up to \$56,600 (\$27.21/hour). Supervisors make \$70,000 per year (\$33.65/hr). A dispatcher in an acting supervisory position receives a daily addition of \$50.00 above their dispatch rate.

Hamilton Fire uses Integraph CAD and has an integrated GIS module. The Integraph platform is shared with the Hamilton police who update the GIS information.

A Nortel desk set phone system is used and the city's trunked radio system is used.

Dispatch roles are divided into two areas. One dispatcher does the "city core" and one does the "regional" area. Both do call taking. On days the third dispatcher does the primary call taking.

Hamilton Fire has experienced some concerns with Hamilton CACC which they attribute to the high turn over in CACC staff, CACC staff being too busy and CACC staff deviating from protocols. The concerns include delays in receiving tiered response calls; not getting enough information from the CACC call takers; vital information not being passed on; and having to pump the CACC call takers for information. On occasion fire dispatchers will call the police to see if they listened in on the call and if so, to obtain additional information that the CACC may not have provided.

C.10 NIAGARA FALLS FIRE

Niagara Falls Fire Department dispatches Fire Services for the City of Niagara Falls and the Town of Lincoln. They dispatch approximately 4,500 calls per year.

They operate with one dispatcher on 24 hours per day and a supervisor working Monday to Friday day shift, who provides assistance when required. There are 4 full time dispatchers and one supervisor. The dispatchers are backed up by 16 firefighters who have been trained to work in the communications room and fill in for vacancies.

Dispatchers are provided with 6 weeks of training following the schedule of an experienced dispatcher after spending some time with the supervisor.

There is no formal QA program. The fire captains monitor performance on an informal basis. They inform the communications centre if they feel there are difficulties which need to be corrected.

On average it takes 52 seconds for the single dispatcher to take the call information and dispatch the fire trucks.

The dispatchers earn approximately \$15.00 hr to start and work up to \$21.50 per hour.

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The centre uses paper based dispatch tracking with a desk based telephone system and simplex radio system.

C.11 ST. CATHARINES FIRE

St. Catharines Fire Department dispatches the fire services for 10 lower tier municipalities dispatching approximately 10,000 calls per year. They have a complement of 10 full time dispatchers maintaining two dispatchers on at all times. The Fire Communications Centre also has a radio technician responsible for both dispatch and vehicle radios.

The salary rate for fire dispatchers is \$39,000 per year (\$18.75/hour) up to \$52,000 per year (\$25.00/hour).

The dispatchers receive 6 weeks of training while following the rotation of an experienced dispatcher.

There is no formal QA program. Municipal fire chiefs appraise the Deputy Chief of concerns that may arise.

The St. Catharines Fire Department has switched to the Bell Mobility Radio system but is encountering difficulties.

Staff turnover is extremely low.

The Fire Department has expressed concerns that Hamilton CACC does not notify them quickly enough for tiered response calls; that information is often incomplete; and call updates are infrequent (this could contribute to a potentially hazardous situation).

C.12 NIAGARA REGIONAL POLICE

Niagara Regional Police dispatched 128,093 calls in 2000. They are also the 9-1-1 PSAB for Niagara Region.

The communications centre is all civilian with a civilian manager, 4 platoon supervisors and an approved 13 dispatchers per platoon. Currently there are only 11 dispatchers per platoon which is also the minimum staffing per shift. They are currently hiring 8 dispatchers. The communications centre has been approved to hire a training officer.

There are two switchboard operators who deal with the administrative calls Monday to Friday, 08:00-24:00 hours.

Shift supervisors are responsible for performance appraisals, training, and complaint reviews. If the incident is serious the Police Standards Unit will investigate.

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Currently there is no formal training program other than working with an experienced dispatcher for 6 months. They plan to introduce classroom training when they hire the 8 new dispatchers.

Between 8 and 10 dispatchers have left the service in the past two years. They currently have 44 full time dispatchers but an approved staffing of 52 full time dispatchers. They have 1 part time dispatcher but focus on full time staff.

Dispatchers are paid \$22.35 hr and supervisors \$27.30. The switchboard staff are paid \$16.55/hr.

They use a PRC CAD which they are looking to upgrade in 2002. The dispatchers can communicate and dispatch via mobile computer terminals in the cruisers. They use a digital Norstar desk telephone system.

The NRP are moving to a Bell Mobility radio system. It was to go live on July 17, 2001 but has been delayed indefinitely due to system difficulties.

As the PSAB for Niagara's 9-1-1 there is regular contact with Hamilton CACC. Two concerns are noted: the lack of experience at Hamilton CACC and the dispatchers' lack of familiarity with the Niagara geography.